

Surrey County Council.

ANNUAL REPORT,

— 1910, —

OF THE

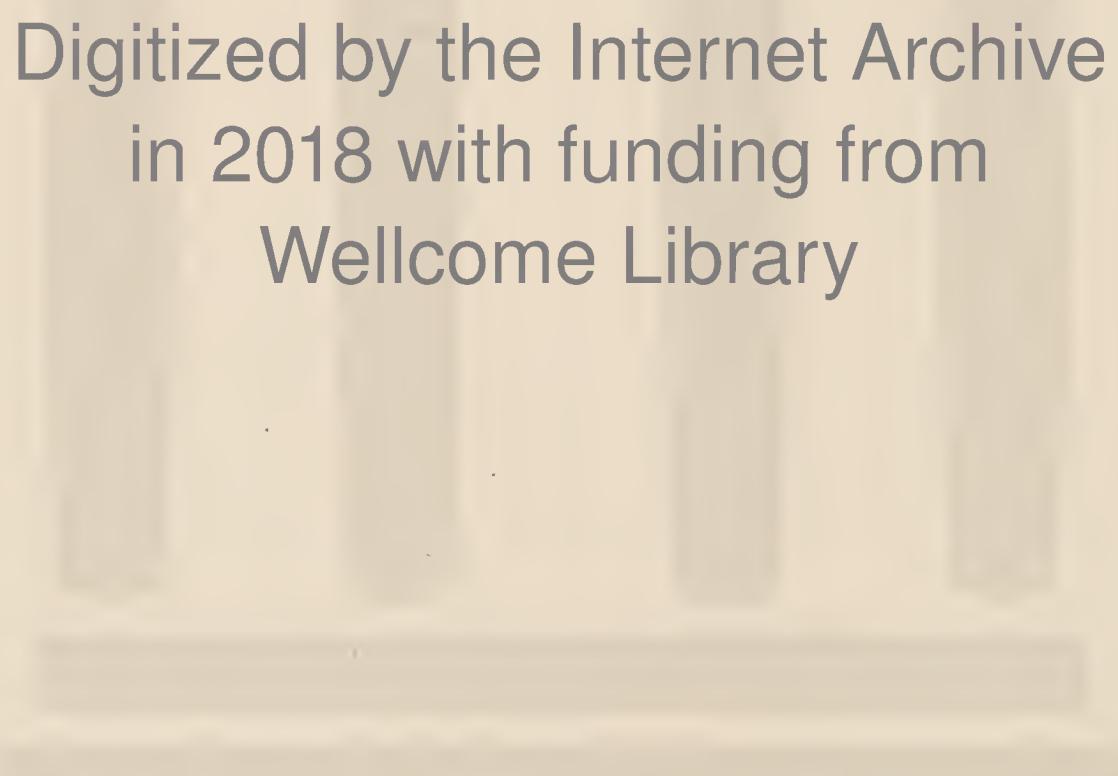
MEDICAL OFFICER OF HEALTH

OF THE

ADMINISTRATIVE COUNTY OF SURREY.

KINGSTON-ON-THAMES :

KNAPP, DREWETT & SONS LTD., PRINTERS.



Digitized by the Internet Archive
in 2018 with funding from
Wellcome Library

<https://archive.org/details/b30148455>

COUNTY HALL,

KINGSTON-UPON-THAMES.

I beg to submit to the Public Health and Housing Committee my annual report upon the health and sanitary condition of the Administrative County of Surrey during the year 1910.

Although I held office in succession to Dr. Seaton only for the last two months of the year, I have tried to give as full a record as possible of the work of the whole year. This record consists in great part of a digest of the annual and special reports made by the medical officers of health of the various sanitary districts, which is now required under the Order of the Local Government Board prescribing the duties of county medical officers of health (printed in full in the County Council Report, November 8th, 1910, pp. 1159-1161). The number of matters upon which medical officers of health are called upon to report grows from year to year, and the labour involved in the preparation of reports in all sanitary districts is considerable.

Special attention may be drawn to the vital statistics of the County for 1910, which are remarkably favourable. Those of previous years have been calculated, as far as possible, for the purpose of comparison. Judging from these statistics it would be hard to find a healthier county than Surrey.

The section on the housing of the working classes deals with important matters which will call for increasing attention from the Committee.

Mr. Campbell-Bayard's valuable report upon the meteorology of the County in 1910 is added to this report, as has been the practice in previous years.

T. HENRY JONES,

County Medical Officer of Health.

August, 1911.

CONTENTS.

VITAL STATISTICS—	PAGE.	HOUSING OF THE WORK- ING CLASSES 53	PAGE.
AREA	5	WATER SUPPLIES 74	
POPULATION	5	POLLUTION OF STREAMS 83	
BIRTHS	9	DISPOSAL OF SEWAGE AND REFUSE 86	
DEATHS	11	FOOD 97	
INFANTILE MORTALITY ...	15	SLAUGHTER HOUSES 97	
DEATHS FROM SEVEN PRIN- CIPAL EPIDEMIC DISEASES	19	MILK 98	
DEATHS FROM PUERPERAL FEVER, TUBERCULOUS DISEASES, CANCER AND RESPIRATORY DISEASES ...	21	SALE OF FOOD AND DRUGS ACTS, 1875-1907 99	
INFECTIOUS DISEASES ...	23	FACTORY AND WORK- SHOP ACT, 1901 102	
SMALL-POX	29	MIDWIVES ACT, 1902 ... 102	
DIPHTHERIA	30	ADMINISTRATION OF THE ACT 103	
SCARLET FEVER	33	PRACTICE OF CERTIFIED MID- WIVES 104	
TYPHOID OR ENTERIC FEVER	36	TRAINING OF MIDWIVES ... 106	
PUERPERAL FEVER	39		
PULMONARY TUBERCULOSIS OR PHTHISIS	41		
PLAQUE	42		
CEREBRO-SPINAL FEVER ...	44		
MEASLES	44		
WHOOPING COUGH	45		
ISOLATION HOSPITALS—		NAMES OF MEDICAL OFFICERS OF HEALTH OF THE SANITARY DISTRICTS 107	
FOR DISEASES GENERALLY ISOLATED, viz.: SCARLET FEVER, DIPHTHERIA AND TYPHOID FEVER	46	METEOROLOGY OF 1910 ... 108	
FOR SMALL-POX	52		

VITAL STATISTICS.

AREA.

The area of the Administrative County of Surrey is 452,817 statute acres, including land and inland water. It is divided into 27 urban districts (of which 6 are municipal boroughs) with a total area of 105,727 acres, and 9 rural districts with a total area of 347,090 acres.

POPULATION.

The Preliminary Report of the Census of 1911 lately issued, shows the total population of the Administrative County to have been 675,985 on April 3rd, 1911. This is an increase of 30·06 per cent. upon the population at the Census of 1901, which was 519,766. The preliminary Census report is liable to revision, therefore the numbers given in it cannot now be regarded as absolutely correct. Detailed comment upon the census returns for the county will be reserved until the full report is published.

In the meantime, however, advantage has been taken of the preliminary report to revise the estimates of population for 1910 issued in the reports of the district medical officers of health. The revised estimates given in the tables for the various sanitary districts are those kindly supplied or verified by the medical officers of health of those districts, save in the case of Egham. The reports of medical officers of health for 1910 were all issued before the census report for 1911, the last annual report having been received on May 24th. As was inevitable in the last year of an intercensal period, several of the individual estimates were somewhat wide of the mark; the populations of 27 sanitary districts were more or less over estimated, and 9 were under

estimated. Taking the county as a whole the population was over-estimated by 26,372 in 1910. For the sake of more correct vital statistics as well as other matters depending upon estimates of population it would be of great advantage to have census enumerations more frequently than once in ten years.

The population of the Administrative County at the middle of 1910, estimated in the light of the preliminary report of the census, was 663,029, the 27 urban districts having a population of 445,018 and the 9 rural districts 218,011. It may be mentioned here that the Croydon Rural District is almost wholly urban in character, indeed much more urban than many of the urban districts; this must be borne in mind when the vital statistics are compared.

The areas and gross populations of all the sanitary districts of the county are set out in the following table; the names of the medical officers of health are given on page 107.

ADMINISTRATIVE COUNTY OF SURREY.

DISTRICTS.	Area in Statute Acres.	Population.		
		Census 1901	Census 1911	to middle of 1910. Estimated
URBAN.				
1. Barnes	2,518	17,821	30,379	29,437
2. Carshalton	2,926	6,746	11,635	11,300
3. Caterham	2,438	9,486	10,841	10,401
4. Chertsey	10,777	12,762	13,819	13,737
5. Dorking	1,339	7,670	7,850	7,840
6. Egham	7,786	11,895	12,551	12,501
7. Epsom	4,424	10,915	19,156	18,860
8. Esher and The Dittons.....	5,978	9,489	12,518	12,290
9. Farnham	1,114	6,401	7,365	7,292
10. Frimley	7,674	8,409	13,673	13,276
11. Godalming (M.B.)	812	8,748	8,847	8,837
12. Guildford (M.B.)	2,593	20,639	23,823	23,580
13. Ham	1,871	1,460	1,435	1,437
14. Kingston-on-Thames (M.B.)	1,133	34,375	37,977	37,695
15. Leatherhead	3,508	4,694	5,491	5,430
16. Maldens and Coombe	3,220	6,233	12,140	11,696
17. Merton	1,762	4,510	12,938	12,305
18. Molesey, East and West	1,518	6,034	6,500	6,465
19. Reigate (M.B.)	5,994	25,993	28,505	28,038
20. Richmond (M.B.)	2,491	31,672	33,223	33,104
21. Surbiton	3,046	15,017	17,713	17,447
22. Sutton	1,836	17,223	21,275	20,975
23. Walton-on-Thames	6,859	10,329	12,858	12,616
24. Weybridge	1,371	5,329	6,286	6,208
25. Wimbledon (M.B.).....	3,221	41,652	54,876	53,751
26. Windlesham	5,692	3,415	4,249	4,180
27. Woking	11,826	18,349	24,810	24,320
Total.....	105,727	357,266	452,733	445,018
RURAL.				
1. Chertsey	16,020	6,657	9,383	9,144
2. Croydon	21,018	33,671	65,136	62,225
3. Dorking	39,525	9,779	10,580	10,520
4. Epsom	31,188	22,443	29,729	29,100
5. Farnham	28,249	16,674	20,262	19,992
6. Godstone	49,907	18,378	23,317	22,887
7. Guildford	53,336	16,491	18,277	18,140
8. Hambleton	63,196	21,660	25,371	25,092
9. Reigate.....	44,651	16,747	21,197	20,911
Total.....	347,090	162,500	223,252	218,011
Administrative County	452,817	519,766	675,985	663,029

Included in the gross populations given above were the inmates of many large institutions not belonging to Surrey. From the figures given in the table the following deductions have therefore to be made in order to obtain the nett population of the county, upon which the birth and death rates may fairly be calculated.

DISTRICTS.	Extra-County Institutions.	Estimated or ascertained average number of inmates in 1910, excluding Permanent Staff.
URBAN.		
Carshalton ...	Children's Infirmary of Metropolitan Asylums Board	800
Caterham ...	Lunatic Asylum of Metropolitan Asylums Board	2,227
Egham ...	Holloway Sanatorium Hospital for the Insane	380
Epsom ...	London County Asylum, Horton ...	2,100
	,, ,, Long Grove	2,100
	,, ,, The Manor	1,000
	County of London Colony for Epileptics, Horton	300
Reigate ...	Earlswood Asylum	450
Sutton ...	Fulham Union Workhouse, Belmont	971
	Ringworm School of the Metropolitan Asylums Board	330
RURAL.		
Croydon ...	London County Asylum, Cane Hill, Coulsdon	2,198
	Holborn Union Workhouse and Schools, Mitcham	1,331
Epsom ...	London County Asylum, Banstead ...	2,450
	Kensington and Chelsea Schools ...	670
	Banstead Surgical Home	20
Godstone ...	Croydon Mental Hospital, Upper Warlingham	535
	Total	17,862

After deduction of these inmates of institutions belonging to other districts the nett population of the Administrative County in the middle of 1910 was estimated to be 645,167. Upon this the nett birth and death rates are calculated.

BIRTHS.

The number of births registered in the Administrative County in 1910 was 13,869. Of these, 418, or 3 per cent., were illegitimate. The nett birth-rate was 21·5 per 1,000 persons living. This is the lowest birth-rate recorded for the county.

The birth-rate of England and Wales in 1910 was 25·1 per 1,000. The average birth-rate of the County for the ten years 1900 to 1909 was 23·6 per 1,000. The decline in the birth-rate of the County is shown in the following table.

ADMINISTRATIVE COUNTY OF SURREY. BIRTH RATES.

Year.	Nett Birth Rate per 1,000 Persons Living.	Year.	Nett Birth Rate per 1,000 Persons Living.
1900	24·2	1906	23·9
1901	23·8	1907	23·4
1902	23·6	1908	23·4
1903	24·2	1909	22·4
1904	24·0	1910	21·5
1905	23·9		

Birth-rates expressed in this way do not furnish material for accurate comparison between one district and another on account of the great differences in age and sex distribution of the populations. Fair comparison can only be made when birth-rates are calculated on the number of females in the child-bearing period of life; the materials for this comparison in Surrey for 1910 are not available.

The following table shows the number of births and the nett birth-rate per 1,000 of the population in the several sanitary districts of the county in 1910. The lowest rate was the striking one of 13·6 per 1,000 in the Weybridge Urban District. The average rate for the 27 urban districts was 21·0 and for the 9 rural districts 21·6 per 1,000. The excess of births over deaths in the whole County was 7,681; it is shown for each district in the table.

BIRTHS IN 1910.

DISTRICTS.	Number.	Nett Rate per 1,000 Persons Living.	Excess of Births over Deaths.
URBAN.			
1. Barnes	682	23·1	423
2. Carshalton	256	24·1	180
3. Caterham	192	23·2	127
4. Chertsey.....	290	21·1	149
5. Dorking	158	20·2	45
6. Egham	276	22·8	164
7. Epsom	304	22·7	263
8. Esher and The Dittons	254	20·3	137
9. Farnham	151	20·4	69
10. Frimley	264	19·8	171
11. Godalming.....	154	17·4	63
12. Guildford	501	21·2	251
13. Ham	22	15·3	10
14. Kingston-upon-Thames	865	22·9	435
15. Leatherhead	103	19·0	38
16. Maldens and Coombe	262	22·4	187
17. Merton	336	28·0	221
18. Molesey, East and West	154	23·8	60
19. Reigate	535	19·3	240
20. Richmond	609	18·3	284
21. Surbiton.....	332	18·4	190
22. Sutton	417	21·3	229
23. Walton-on-Thames	293	23·2	175
24. Weybridge	85	13·6	38
25. Wimbledon	1,159	21·5	699
26. Windlesham	86	20·5	53
27. Woking	571	24·8	350
Total	9,311	21·0	5,151
RURAL.			
1. Chertsey.....	202	22·0	128
2. Croydon	1,466	25·1	899
3. Dorking	211	20·0	101
4. Epsom.....	505	19·4	381
5. Farnham	479	23·9	255
6. Godstone	446	19·4	252
7. Guildford	339	18·7	152
8. Hambledon	490	19·5	241
9. Reigate	420	21·0	221
Total	4,558	21·6	2,530
Administrative County	13,869	21·5	7,681

DEATHS.

The number of deaths registered in the Administrative County in 1910 was 7,465. This does not represent the number of deaths rightfully belonging to the County, because it includes the deaths of strangers who died in public institutions within the County and does not include the deaths of Surrey people who died in public institutions without the County. Corrections must be made for these transferable deaths in order to ascertain the nett death-rate which can be used for purposes of comparison. These corrections have hitherto been made at the end of each year, the County Medical Officer obtaining the returns of deaths in public institutions, as far as possible, and distributing them to the districts to which they belonged. A new arrangement has now been made whereby the Registrar-General will send lists of transferable deaths to the County Medical Officer at the end of each quarter, for distribution to their proper districts. This will have the great advantage of providing a uniform system for the whole country.

The number of deaths found after correction to belong to the Administrative County in 1910 was 6,188. This gives a death-rate of 9.6 per 1,000 of the nett population, the lowest recorded in the last 20 years.

The revised death-rate of England and Wales for the year 1910 was 13.5 per 1,000. The average death-rate of the Administrative County for the ten years 1900 to 1909 was 11.8 per 1,000. The yearly death-rates for this period, calculated upon revised estimates of the population, are given below.

ADMINISTRATIVE COUNTY OF SURREY. DEATH-RATES.

Year.	Nett death rate per 1000 persons living.	Year.	Nett death rate per 1000 persons living.
1900	13.2	1905	10.7
1901	12.2	1906	11.5
1902	11.9	1907	11.2
1903	11.1	1908	10.9
1904	11.5	1909	10.5
		1910	9.6

The following table shows the nett death-rates of the various sanitary districts in the County for 1910. The lowest death-rate was 6.4 per 1,000 in The Maldens and Coombe Urban District. Death-rates below 8 per 1,000 were recorded in Carshalton, Caterham, Frimley, Weybridge, and Windlesham. Although comparisons founded upon the vital statistics of small districts for a single year are fallacious, it may be pointed out that the death-rates of all the districts in Surrey, save two, were much below the death-rate of England and Wales in 1910 (13.5). The average death-rate of the 27 urban districts in the County was 9.6, and that of the 9 rural districts was 9.5 per 1,000

DEATHS IN 1910.

DISTRICTS.	Number.	Nett rate per 1000 living.	DISTRICTS.	Number.	Nett rate per 1000 living.
URBAN.					
1 Barnes	259	9.1	16 Maldens and Coombe	75	6.4
2 Carshalton	76	7.2	17 Merton	115	9.6
3 Caterham	65	7.9	18 Molesley E. & W.	94	14.5
4 Chertsey	141	10.2	19 Reigate	295	10.6
5 Dorking	113	14.4	20 Richmond	325	9.8
6 Egham	112	9.2	21 Surbiton	142	8.1
7 Epsom	141	10.6	22 Sutton	188	9.6
8 Esher and the Dittons	117	9.5	23 Walton-on-Thames	118	9.3
9 Farnham	82	11.3	24 Weybridge	47	7.5
10 Frimley	93	7.0	25 Wimbledon	460	8.5
11 Godalming	91	10.2	26 Windlesham ...	33	7.8
12 Guildford	250	10.6	27 Woking	221	9.6
13 Ham	12	8.3	Total.....	4160	9.6
14 Kingston-upon-Thames	430	11.4			
15 Leatherhead ...	65	12.0			
RURAL.					
1 Chertsey	74	8.0	7 Guildford	187	10.3
2 Croydon	567	9.7	8 Hambledon	249	9.9
3 Dorking	110	10.5	9 Reigate	199	9.9
4 Epsom	224	8.6			
5 Farnham	224	11.2			
6 Godstone	194	8.7	Total.....	2028	9.5

The tables given in the reports of medical officers of health show the causes of and ages at death in all the sanitary districts of the County in 1910. From these tables the following table has been compiled showing the same particulars of the deaths belonging to the whole County.

ADMINISTRATIVE COUNTY OF SURREY.—CAUSES OF AND AGES AT DEATH IN 1910.

Causes.	Under 1 Year.	1 & under 5 Years.	5 & under 15 Years.	15 & under 25 Years.	25 & under 65 Years.	65 & upwards.	All Ages.	
							65 Years & upwards.	65 Years & upwards.
Small Pox	—	—
Measles	—	—
Scarlet Fever	—	—
Whooping Cough	—	—
Diphtheria (including Membranous Croup) Group	—	—
Typhus	—	—
Fever	—	—
Enteric	—	—
Other continued	—	—
Epidemic Influenza	—	—
Cholera	—	—
Plague	—	—
Diarrhoea	—	—
Enteritis	—	—
Gastritis	—	—
Puerperal Fever	—	—
Erysipelas	—	—
Phthisis (Pulmonary Tuberculosis)	—	—
Other Tuberculous Diseases	—	—
Cancer, Malignant Disease	—	—
Bronchitis	—	—
Pneumonia	—	—
Pleurisy	—	—
Other Diseases of Respiratory Organs	—	—
Alcoholism	—	—
Cirrhosis of Liver	—	—
Venereal Diseases	—	—
Premature Birth	—	—
Disorders and Accidents of Parturition	—	—
Heart Diseases	—	—
Accidents	—	—
Suicides	—	—
All other causes	—	—
All causes	—	—
							237	287
							349	2028
							951	6188
							2336	2336

INFANTILE MORTALITY.

The number of deaths of children under one year of age belonging to the Administrative County of Surrey in 1910 was 944, giving a nett infantile death-rate of 68 per 1,000 births.

The corresponding rate for England and Wales was 106, and for England and Wales less 213 towns it was 96. The average rate in the Administrative County for the ten years 1900 to 1909 was 93. The yearly rates are given below.

ADMINISTRATIVE COUNTY OF SURREY. INFANTILE DEATH RATES.

Year.	Infantile death rate per 1000 births.	Year.	Infantile death rate per 1000 births.
1900	107	1905	82
1901	105	1906	101
1902	101	1907	84
1903	93	1908	78
1904	108	1909	72
		1910	68

The infantile death-rates in the various sanitary districts in 1910 were remarkably low; in all save two they were considerably lower than the unusually low rate for England and Wales less 213 towns (96); rates under 25 per 1,000 were recorded in Leatherhead (19) and Windlesham (23). The average rate in the 27 urban districts was 70, and in the 9 rural districts 63 per 1,000 births. The following table shows the nett infantile death-rate in each of the sanitary districts of the County, based upon Table V. of the Local Government Board, as given in the annual reports of the medical officers of health.

INFANTILE DEATHS IN 1910.

DISTRICTS.	Number.	Nett rate per 1000 register'd births.	DISTRICTS.	Number.	Nett rate per 1000 register'd births.
URBAN.					
1 Barnes	49	69	16 Maldens and Coombe	14	53
2 Carshalton.....	11	43	17 Merton	29	86
3 Caterham.....	14	73	18 Molesley E.&W.	13	74
4 Chertsey	13	44	19 Reigate	32	59
5 Dorking.....	9	57	20 Richmond	37	60
6 Egham	16	57	21 Surbiton	28	84
7 Epsom	29	97	22 Sutton	27	65
8 Esher and the Dittons	20	78	23 Walton-on- Thames	22	75
9 Farnham	7	46	24 Weybridge	4	47
10 Frimley	19	71	25 Wimbledon ...	86	74
11 Godalming	17	110	26 Windlesham ...	2	23
12 Guildford.....	39	78	27 Woking	42	73
13 Ham	2	90	Total.....	655	70
14 Kingston-upon. Thames	72	83			
15 Leatherhead ...	2	19			
RURAL.					
1 Chertsey	9	44	7 Guildford	21	62
2 Croydon	98	67	8 Hambledon	33	67
3 Dorking	10	47	9 Reigate	25	59
4 Epsom	32	63			
5 Farnham	36	75			
6 Godstone	25	56			
			Total.....	289	63

The following table shows the number of deaths from all causes and from certain specified causes in the first year of life in the whole County.

ADMINISTRATIVE COUNTY OF SURREY.—INFANTILE MORTALITY IN 1910.

DEATHS FROM STATED CAUSES IN WEEKS AND MONTHS UNDER ONE YEAR OF AGE.

		1 Year, Under, Deaths months.											
		Total Deaths months.											
		11 to 12 months.											
		10 to 11 months.											
		9 to 10 months.											
		8 to 9 months.											
		7 to 8 months.											
		6 to 7 months.											
		5 to 6 months.											
		4 to 5 months.											
		3 to 4 months.											
		2 to 3 months.											
		1 to 2 months.											
		Under, Weeks.											
		Small Pox ...											
		Chicken Pox ...											
		Measles ...											
		Scarlet Fever ...											
		Diphtheria (including membranous croup) ...											
		Whooping Cough ...											
		Diarrhoea (all forms)											
		Enteritis, Muco-Enteritis,											
		Gastro-Enteritis ...											
		Gastritis, Gastro-Intes- tinal Catarrh ...											
		Premature Birth ...											
		Congenital Defects ...											
		Injury at Birth ...											
		Want of Breast Milk,											
		Starvation ...											
		Atrophy, Debility, Ma- rasmus ...											
		153	23	24	7	207	22	3	2	—	—	1	2
		43	15	6	3	67	6	—	—	—	—	1	1
		5	—	—	—	5	—	—	—	—	—	—	—
		—	—	1	—	1	1	—	—	—	—	—	—
		29	14	12	5	60	14	9	10	3	5	—	2
		—	—	—	—	—	—	—	—	—	—	1	—
		—	—	—	—	—	—	—	—	—	—	—	105

(Continued on next page.)

ADMINISTRATIVE COUNTY OF SURREY.—INFANTILE MORTALITY IN 1910.

DEATHS FROM SEVEN PRINCIPAL EPIDEMIC
DISEASES.

The number of deaths in the Administrative County ascribed to the seven principal epidemic diseases, viz., small-pox, measles, scarlet fever, diphtheria, whooping cough, fever (typhus, enteric, and continued), and diarrhoea, during 1910 was 309, giving the low epidemic death-rate of 0·48 per 1,000 persons living. The average rate for the ten years 1900 to 1909 was 0·97 per 1,000. The yearly rates are given below.

DEATH-RATES FROM PRINCIPAL EPIDEMIC DISEASES.

Year.	Death rate per 1000 persons living.	Year.	Death rate per 1000 persons living.
1900	1·30	1905	0·77
1901	1·36	1906	1·39
1902	0·94	1907	0·73
1903	0·76	1908	0·72
1904	1·12	1909	0·64
		1910	0·48

The epidemic death-rates in all the sanitary districts in 1910 were very low; in the urban districts the average rate was 0·45 per 1,000, and all the rates save one were under 1 per 1,000; in the rural districts the average was 0·54 per 1,000, and all the rates save one were under 1 per 1,000. The following table shows the rates in all the districts.

DEATHS FROM THE SEVEN PRINCIPAL EPIDEMIC
 DISEASES, 1910.

DISTRICTS.	Number.	Rate per 1000 persons living.	DISTRICTS.	Number.	Rate per 1000 persons living.
URBAN.					
1 Barnes	11	0·37	16 Maldens and Coombe	—	—
2 Carshalton	6	0·57	17 Merton	6	0·49
3 Caterham	6	0·73	18 Molesey E. & W.	7	1·08
4 Chertsey	4	0·29	19 Reigate	11	0·40
5 Dorking	9	1·15	20 Richmond	9	0·27
6 Egham	2	0·16	21 Surbiton	5	0·29
7 Epsom	5	0·36	22 Sutton	7	0·36
8 Esher and the Dittons.....	9	0·73	23 Walton-on- Thames	3	0·24
9 Farnham	4	0·55	24 Weybridge	3	0·48
10 Frimley	2	0·15	25 Wimbledon	29	0·54
11 Godalming.....	1	0·11	26 Windlesham	1	0·24
12 Guildford	9	0·38	27 Woking	11	0·48
13 Ham	—	—	Total.....	195	0·45
14 Kingston-upon- Thames.....	27	0·72			
15 Leatherhead ...	9	1·66			
RURAL.					
1 Chertsey	—	—	7 Guildford	5	0·28
2 Croydon	71	1·23	8 Hambledon	3	0·12
3 Dorking	5	0·48	9 Reigate	10	0·50
4 Epsom	8	0·31	Total.....	114	0·54
5 Farnham	2	0·10			
6 Godstone	10	0·45			

DEATHS FROM PUERPERAL FEVER, TUBERCULOUS DISEASES, CANCER AND RESPIRATORY DISEASES.

The death-rates from these diseases are important for purposes of comparison. They are therefore given in the following tables (1) for the whole County, and (2) for the separate sanitary districts.

ADMINISTRATIVE COUNTY. DEATHS FROM SPECIFIED DISEASES.

	1910		Previous Years.
	Deaths.	Rate per 1000 persons living.	Death rate per 1000 persons living.
Puerperal Fever	17	0·02	0·01 (2 years.)
Pulmonary Tuberculosis ...	441	0·68	0·80 (5 years.)
Other Tuberculous Diseases	141	0·22	0·26 (5 years.)
Cancer, Malignant Disease	592	0·92	not available.
Respiratory Diseases, all forms	895	1·39	1·63 (5 years.)

SEPARATE DISTRICTS. DEATHS FROM SPECIFIED
 DISEASES, 1910.

URBAN DISTRICTS.	Puerperal Fever.		Pulmonary Tuber- culosis.		Other Tuberculous Diseases.		Cancer.		Respiratory Diseases.	
	No.	Rate per 1,000.	No.	Rate per 1,000.	No.	Rate per 1,000.	No.	Rate per 1,000.	No.	Rate per 1,000.
1 Barnes	—	—	22	0.75	9	0.31	22	0.75	30	1.02
2 Carshalton ...	1	0.12	2	0.19	4	0.38	9	0.86	13	1.24
3 Caterham	1	0.09	3	0.37	4	0.49	9	0.87	6	0.73
4 Chertsey	1	0.07	10	0.73	3	0.22	16	1.17	18	1.31
5 Dorking	2	0.25	3	0.38	5	0.64	22	2.81	15	1.92
6 Egham	—	—	4	0.33	5	0.41	16	1.32	7	0.58
7 Epsom	—	—	9	0.48	3	0.22	9	0.67	37	2.76
8 Esher and the Dittons	1	0.08	7	0.57	—	—	14	1.14	9	0.73
9 Farnham	—	—	6	0.82	—	—	10	1.37	17	2.44
10 Frimley	—	—	7	0.53	3	0.23	11	0.83	11	0.83
11 Godalming ...	—	—	7	0.79	3	0.34	8	0.91	9	1.02
12 Guildford ...	1	0.04	12	0.51	5	0.21	29	1.23	40	1.70
13 Ham	—	—	1	0.69	1	0.69	2	1.39	...	..
14 Kingston-on- Thames	—	—	44	1.17	9	0.24	24	0.64	62	1.65
15 Leatherhead..	—	—	3	0.55	2	0.37	7	1.29	9	1.66
16 Maldens and Coombe	—	—	6	0.51	2	0.17	6	0.51	9	0.77
17 Merton	—	—	5	0.41	7	0.57	8	0.65	12	0.98
18 Molesey E& W	1	0.15	7	1.08	2	0.31	10	1.55	9	1.39
19 Reigate	1	0.03	20	0.73	9	0.33	33	1.20	36	1.31
20 Richmond ...	—	—	26	0.79	2	0.60	31	0.94	61	1.85
21 Surbiton	—	—	8	0.46	3	0.17	21	1.20	27	1.55
22 Sutton	2	1.02	16	0.82	4	0.20	11	0.56	26	1.33
23 Walton-on- Thames	—	—	11	0.87	3	0.24	16	1.27	18	1.43
24 Weybridge ...	—	—	2	0.32	—	—	5	0.81	6	0.97
25 Wimbledon ...	—	—	35	0.65	8	0.15	54	1.00	55	1.02
26 Windlesham	—	—	4	0.96	1	0.24	5	1.20	5	1.20
27 Woking	—	—	12	0.52	4	0.17	12	0.52	41	1.79
Total	11	0.02	292	0.67	101	0.23	420	0.97	588	1.36

SEPARATE DISTRICTS. DEATHS FROM SPECIFIED
DISEASES, 1910.

RURAL DISTRICTS.	Puerperal Fever.		Pulmonary Tuber- culosis.		Other Tuberculous Diseases.		Cancer.		Respiratory Diseases.	
	No.	Rate per 1,000.	No.	Rate per 1,000.	No.	Rate per 1,000.	No.	Rate per 1,000.	No.	Rate per 1,000.
1 Chertsey	—	—	9	0·99	3	0·33	8	0·88	14	1·53
2 Croydon	3	0·05	46	0·79	14	0·24	33	0·57	93	1·61
3 Dorking	—	—	12	1·14	2	1·90	12	1·14	15	1·43
4 Epsom	—	—	16	0·62	6	0·23	23	0·89	35	1·35
5 Farnham	—	—	11	0·55	3	0·15	17	0·85	40	2·00
6 Godstone	—	—	9	0·40	4	0·18	22	0·99	34	1·52
7 Guildford.....	3	0·17	12	0·66	2	0·11	21	1·15	20	1·10
8 Hambledon ..	—	...	16	0·64	5	0·20	14	0·56	27	1·07
9 Reigate	—	...	18	0·90	1	0·05	22	1·10	29	1·45
Total	6	0·03	149	0·70	40	0·19	172	0·82	307	1·46

INFECTIOUS DISEASES.

The number of cases of infectious disease notified in the County in 1910 was 2,955. This includes the diseases notifiable in all districts alike (small pox, cholera, diphtheria, erysipelas, scarlet fever, typhus, enteric, relapsing and continued fever, puerperal fever and plague), together with pulmonary tuberculosis occurring in Poor Law institutions, and measles in the four districts in which it was notifiable during the year (the urban districts of Farnham, The Maldens and Coombe, and Merton and the rural district of Farnham).

The following table shows the number and age distribution of the cases of infectious disease notified.

ADMINISTRATIVE COUNTY OF SURREY.—CASES OF INFECTIOUS DISEASE NOTIFIED IN 1910.

The number of notifications of Measles in Farnham Rural District was not stated and is therefore not included in the table.

The ages of patients in Frimley Urban District and in Farnham and Hambleton Rural Districts were not stated, therefore the figures in the age columns are incomplete.

The return of notifications of Pulmonary Tuberculosis is incomplete owing to omissions in some reports.

Taking into consideration the diseases which have been notifiable in all districts in past years, and excluding pulmonary tuberculosis and measles which are only partially notifiable, the case rate per 1,000 of the gross population of the county for the last eleven years may be compared thus:—

WHOLE COUNTY. INFECTIOUS DISEASES NOTIFIED IN 1910
AND PREVIOUS YEARS.

Year.	Number of cases notified.	Case rate per 1,000 of gross population.	Year.	Number of cases notified.	Case rate per 1,000 of gross population.
1900	2,635	5·2	1906	2,907	4·8
1901	2,769	5·3	1907	3,279	5·3
1902	2,813	5·2	1908	3,043	4·8
1903	2,492	4·5	1909	3,321	5·1
1904	2,317	4·1	1910	2,660	4·0
1905	2,405	4·1			

This shows that the generally notifiable infectious diseases were less prevalent in 1910 than in any of the previous ten years. Many factors are concerned in the prevalence of these diseases, of which the weather is certainly one; it is noteworthy that a year, which, according to Mr. Campbell-Bayard's meteorological report (see p. 108), was very wet and sunless though of nearly average temperature, was one in which infectious diseases were less prevalent than usual.

Under a Local Government Board Order of December 13th, 1910, every district Medical Officer of Health is now required to send a weekly return of notified cases of infectious disease both to the Local Government Board and to

the County Medical Officer of Health. In consequence of this the monthly returns issued for fifteen years in Surrey by Dr. Seaton were discontinued at the end of 1910, and quarterly summaries have since been issued in their stead.

The following table shows the number of cases of infectious disease notified and removed to hospital in each sanitary district in the county in 1910. For convenience only the generally notifiable diseases are included.

CASES OF INFECTIOUS DISEASE NOTIFIED IN EACH SANITARY DISTRICT IN 1910.

Cases removed to Hospital inserted in Brackets.

	Small Pox.	Cholera.	Diphtheria.	Erysipelas.	Scarlet Fever.	Typhus Fever.	Enteric Fever.	Relapsing Fever.	Continued Fever.	Puerperal Fever.	Plague	Totals.
URBAN DISTRICTS.												
1 Barnes	40 (35)	16 (1)	49 (38)	—	1 (1)	—	—	1 (0)	—	107 (75)
2 Carshalton	30 (26)	3 (0)	39 (37)	—	2 (0)	—	—	1 (0)	—	73 (63)
3 Caterham	5 (2)	12 (0)	19 (16)	—	3 (0)	—	—	—	—	39 (18)
4 Chertsey	16 (14)	12 (0)	78 (41)	—	—	—	—	—	—	109 (55)
5 Dorking	26 (22)	4 (3)	9 (8)	—	—	—	—	2 (0)	—	41 (33)
6 Egham	7 (0)	4 (0)	28 (0)	—	—	—	—	—	—	39 (0)
7 Epsom	3 (3)	14 (0)	62 (61)	—	—	—	—	—	—	87 (64)
8 Esher and the Dittons	40 (37)	6 (0)	65 (57)	—	—	—	—	1 (0)	—	115 (95)
9 Farnham	13 (13)	2 (0)	2 (1)	—	—	—	—	—	—	18 (14)
10 Frimley	12 (1)	2 (0)	22 (18)	—	—	—	—	—	—	38 (19)
11 Godalming	7 (7)	2 (0)	14 (12)	—	—	—	—	—	—	23 (19)
12 Guildford	5 (5)	9 (0)	14 (11)	—	—	—	—	—	—	30 (16)
13 Ham	2 (2)	1 (0)	15 (12)	—	—	—	—	—	—	18 (14)
14 Kingston-on-Thames	26 (2)	34 (0)	106 (38)	—	—	—	—	—	—	177 (44)
15 Leatherhead	23 (16)	—	61 (49)	—	—	—	—	—	—	84 (65)
16 Maldens and Coombe	8 (8)	10 (0)	18 (11)	—	—	—	—	—	—	37 (19)
17 Merton	27 (21)	5 (1)	11 (10)	—	—	—	—	—	—	47 (33)
18 Molesey E. and W.	17 (14)	2 (0)	31 (29)	—	—	—	—	—	—	51 (43)
19 Reigate	26 (21)	4 (0)	12 (9)	—	—	—	—	—	—	46 (30)
20 Richmond	60 (39)	11 (0)	105 (88)	—	—	—	—	—	—	177 (127)
21 Surbiton	8 (5)	7 (0)	29 (26)	—	—	—	—	—	—	47 (32)
22 Sutton	10 (6)	6 (0)	28 (15)	—	—	—	—	—	—	49 (23)
23 Walton-on-Thames	13 (10)	6 (0)	48 (30)	—	—	—	—	—	—	70 (41)
24 Weybridge	10 (7)	—	27 (18)	—	—	—	—	—	—	38 (25)
25 Wimbledon	65 (46)	31 (0)	148 (92)	—	—	—	—	—	—	254 (141)
26 Windlesham	—	2 (0)	1 (1)	—	—	—	—	—	—	3 (1)
27 Woking	14 (13)	6 (0)	12 (11)	—	—	—	—	—	—	35 (24)
All Urban Districts	...	—	513 (375)	211 (5)	1,053 (739)	—	54 (14)	—	—	21 (0)	—	1,852 (1,133)

CASES OF INFECTIOUS DISEASE NOTIFIED IN EACH SANITARY DISTRICT IN 1910—*continued.*
Cases removed to Hospital inserted in Brackets.

	Small Pox.	Cholera.	Diph-theria.	Ery-sipelas.	Scarlet Fever.	Typhus Fever.	Enteric Fever.	Relaps-ing Fever.	Con-tinued Fever.	Puer-peral Fever.	Plague.	Totals.
All Urban Districts ...	—	—	513 (375)	211 (5)	1,053 (739)	—	54 (14)	—	—	21 (0)	—	1,852 (1,133)
RURAL DISTRICTS.												
1 Chertsey	—	1.5 (7)	4 (0)	6 (4)	—	—	—	—	—	25 (11)
2 Croydon	—	166 (132)	50 (4)	242 (207)	—	—	—	—	—	483 (355)
3 Dorking	—	6 (4)	2 (0)	15 (13)	—	—	—	—	—	23 (17)
4 Epsom	—	18 (15)	8 (0)	56 (52)	—	—	—	—	—	86 (69)
5 Farnham	—	19 (17)	5 (0)	11 (10)	—	—	—	—	—	35 (27)
6 Godstone	—	16 (14)	6 (0)	24 (22)	—	—	—	1 (0)	—	50 (36)
7 Guildford	—	5 (5)	3 (0)	9 (5)	—	—	—	3 (0)	—	20 (10)
8 Hambledon	—	9 (6)	5 (0)	26 (21)	—	—	—	1 (0)	—	42 (27)
9 Reigate	—	10 (7)	14 (0)	23 (17)	—	—	—	5 (4)	—	52 (28)
All Rural Districts ...	—	—	264 (207)	97 (4)	412 (351)	—	29 (15)	—	—	14 (3)	—	816 (580)
Whole County	—	—	777 (582)	308 (9)	1,465 (1,090)	—	83 (29)	—	—	35 (3)	—	2,668 (1,713)

The following table shows the number of deaths from each of the generally notifiable infectious diseases, and the case fatality, that is the rata per cent. of deaths to notifications.

WHOLE COUNTY. DEATHS FROM INFECTIOUS DISEASES
IN 1910, AND CASE FATALITY.

Diseases.	Number of cases notified.	Number of Deaths.	Ratio per cent. of Deaths to notifications.
Smallpox	—	—	—
Cholera	—	—	—
Diphtheria (including Membranous Croup)	777	74	9.52
Erysipelas	308	17	5.52
Scarlet Fever	1,465	26	1.77
Typhus Fever	—	—	—
Enteric Fever	75	8	10.7
Relapsing Fever	—	—	—
Continued Fever	—	—	—
Puerperal Fever	35	17	48.5
Plague	—	—	—

SMALL POX.

No cases were notified during the year; the last year in which a case was notified in the administrative county was 1906.

Full returns as to vaccination of infants in the urban districts of Barnes, Esher and the Dittons, Godalming, Guildford, Kingston-upon-Thames, East and West Molesey, Reigate, Richmond and Surbiton, and in the rural districts

of Godstone, Guildford and Reigate have been received. The returns for the whole county are incomplete and cannot therefore be given here. Difficulty has arisen in obtaining separate returns in many of the sanitary districts, because the vaccination area is that of a union, which may and often does include more than one sanitary district. From the administrative point of view it is desirable that the supervision of public vaccination should be in the hands of sanitary authorities, who are charged with the general duty of safeguarding the public health in their own districts, rather than, as at present, in the hands of poor-law authorities who have otherwise nothing to do with the prevention of infectious diseases, and act for districts which are not the same as those of sanitary authorities.

Dr. Bird of Godalming, Dr. Coleman of Surbiton, Dr. Robertson of Godstone, and Dr. Senior of Esher and the Dittons draw special attention in their reports to the danger of the increase in the proportion of un-vaccinated persons in their districts in view of the outbreak of small-pox in London in the latter part of the year.

DIPHTHERIA.

The number of cases notified in the County was 777; the case rate was 1.17 per 1,000 of the gross population. In 1909 the corresponding rate was 1.13 per 1,000; the average rate in the ten years 1900 to 1909 was 1.35 per 1,000. The proportion of notified cases removed to isolation hospitals during 1910 was 75 per cent. The number of deaths ascribed to diphtheria (including membranous croup) was 74, giving a case mortality of 9.52 per cent. of notifications. In the death returns 6 deaths were ascribed to croup (3 in Sutton and 1 in each of the rural districts of Croydon, Godstone and Hambledon); these have not been included among the

deaths from diphtheria. Eight public elementary schools were closed for varying periods during the year by reason of outbreaks of diphtheria.

No serious or widespread outbreak occurred during the year, but in four districts special reports were made on localised outbreaks.

Dorking U.D. An outbreak occurred in the first quarter of the year upon which Dr. Williamson made a special report by request of the Local Government Board. Thirteen cases were notified in all, some of which appeared to have been due to a child who had suffered from a suspicious but unrecognised illness in the previous December. No definite connexion was traced between the other cases.

Esher and the Dittons U.D. An outbreak occurred in Esher in the summer among school children, upon which Dr. Senior made a special report. The disease appeared to have been spread by personal infection. The drainage and water supply of the school were improved, and the question of improved cloakroom accommodation was under consideration at the end of the year.

Leatherhead U.D. Twenty-three cases occurred between June and December. The spread appeared to be due to personal infection. The evidence in two cases pointed to infection after contact with patients recently discharged from the Cuddington Joint Isolation Hospital. Most of the cases occurred among children of school age, and Dr. Williamson paid many visits to schools and homes.

Merton U.D. Dr. Belilius reported upon an unusual prevalence of diphtheria between January and May, 16 cases in all. No source of infection was discovered; the evidence pointed to unsuspected cases.

Instructive comments were also made in the following reports:—

Reigate M.B. Six out of 20 cases, *i.e.*, 23 per cent., were discovered by examination of children absent from school for short periods with indefinite symptoms; similar percentages were recorded in the two previous years. Dr. Porter has devoted much attention to the systematic following up of school absentees, with results very advantageous to the public health of the borough. He gives two examples of cases met with during the year in which the evidence suggested the possibility "that carriers might continue for many years to be reservoirs of infection."

Richmond M.B. Dr. Crocker gives particulars showing the great value of systematic examination of school children during the prevalence of diphtheria.

Surbiton U.D. Dr. Coleman, in the course of his remarks upon diphtheria, says "as its spread apart from the initial case is due to personal contact, it is here that the school plays so leading a part in extending it. Owing to the pressure put on parents by attendance and school officers, children are often, I am persuaded, compelled to go to school when they are unfit to do so."

Wimbledon M.B. 50 per cent. of the cases notified were among children of school age. "Two cases showed prolonged periods of infection and seemed to point very strongly in one case to a carrier, and in the other case to a carrier or to the persistent infectivity of the person first attacked."

Chertsey R.D. Dr. Brind gives examples showing "the advantages of taking early action in connexion with the first cases reported in any district, and in making careful enquiries into the cause of absence from school of any school children, and particularly the great advantages obtained

from having bacterioscopic examinations of swabs taken from any cases in which there is the slightest suspicion of the existence of diphtheria."

Epsom R.D. Dr. Williamson reports upon an outbreak in Ashtead where the evidence pointed to the introduction of infection by children treated at the Cuddington Joint Isolation Hospital for scarlet fever a few weeks previously.

SCARLET FEVER.

The number of cases notified in the county was 1,465; the case rate was 2.21 per 1,000 of the gross population. In 1909 the corresponding rate was 3.29 per 1,000; the average rate during the ten years 1900 to 1909 was 2.62 per 1,000. The proportion of notified cases removed to isolation hospitals during 1910 was 74.5 per cent. The number of deaths ascribed to scarlet fever was 26, giving a case mortality of 1.77 per cent. of notifications.

No serious outbreak of scarlet fever occurred in the county during the year. The reports of medical officers of health show that the prevailing type was mild, and that spread of the disease was due in several districts to missed cases (*e.g.*, Epsom U.D., Ham U.D., Reigate M.B., Richmond M.B., Walton-on-Thames U.D., Wimbledon M.B.). In this connexion particulars were given in several reports showing the importance of close co-operation between medical supervision of schools and general sanitary work, and the value of the system of school notification of suspicious cases which has been in force in this county for the past five years. Seven public elementary schools were closed in the county during the year by reason of outbreaks of scarlet fever.

Chertsey U.D. Dr. Brind gives particulars of several cases discovered through school notification. He also gives interesting tables of particulars as to cases treated at home

and secondary cases following them. The percentage of cases removed to hospital for each of the ten years 1901 to 1910 is given, viz. :—68, 93, 81, 64, 77, 61, 60, 68, 88, 52.

Epsom U.D. Dr. Williamson gives particulars of four cases which occurred soon after the return of members of their families from the Cuddington Joint Isolation Hospital, the circumstances pointing to the probability that they were return cases. He also mentions several un-recognised cases discovered through medical examination of school children.

Kingston-upon-Thames M.B. Notified cases 106; of these 31 were removed to the Hampton Isolation Hospital by arrangement. In connexion with this Dr. Beale Collins states: “The arrangement has been entered into for the removal of patients from houses where they could only be treated with danger either to themselves or to the public. The hospital is not available for those who merely wish to be relieved of the inconvenience of an infectious case in the home.”

Leatherhead U.D. “A considerable proportion of the patients failed shortly after the return from hospital of other members of the family.” This refers to the Cuddington Joint Isolation Hospital. Particulars are given of 7 such cases.

Reigate M.B. Dr. Porter states that the outbreaks in the district are derived almost solely from missed cases, and especially those imported from outside sources, one of which is the boarding out of London children during the summer. Special care is now taken in the district with regard to such children, secretaries of societies being advised as to the suitability of houses proposed, and circulars being distributed to the householders receiving children and to local representatives of societies.

Richmond M.B. Eleven missed cases were discovered in the schools.

Surbiton U.D. There were very few cases and no outbreak. Dr. Coleman suggests that the persistence of sporadic cases throughout the year points to sources of infection as yet unrecognised, and to the possibility of the existence of carriers of the disease.

Wimbledon M.B. Attention is drawn to the importance of missed cases and of school cases; 75 per cent. of the cases notified were among children of school age. A proposal to extend the accommodation for scarlet fever cases in the isolation hospital was considered during the year, and Dr. Nash made a special report advising against it, for three chief reasons, viz. :—(1) diminution of severity and mortality in recent years, (2) practically no diminution in the number of cases notified as a result of hospital isolation, (3) frequent occurrence of return cases after hospital isolation. The practice in Wimbledon had been to remove to hospital about 60 per cent of the cases. Dr. Nash recommended the addition of an observation block for doubtful cases needing removal for special reasons, but beyond that no extension of the existing accommodation, which he considered should only be used for cases occurring in the houses of purveyors or manufacturers of food, clothing and the like, and for cases occurring in the poorest homes, his opinion being that an isolation hospital "is established primarily for the controlling of infectious disease and is not a charitable institution, nor does it exist to relieve the ratepayers of the inconvenience of having to nurse cases of infectious disease." He touched upon the practice of treatment by inunction, but was not prepared to take the responsibility of advising it as an alternative to isolation in the present state of knowledge.

Epsom R.D. Dr. Williamson gives particulars of 9 cases in which the circumstances pointed to the conveyance of infection by children recently discharged from the Cuddington Joint Isolation Hospital.

Farnham R.D. Dr. Tanner draws attention to the value of an observation block for suspicious cases in the isolation hospital.

Reigate R.D. Dr. Porter gives particulars of 3 return cases which, he thinks, were "connected with the segregation of considerable numbers of patients suffering from various types of the disease."

TYPHOID OR ENTERIC FEVER.

The number of cases notified in the county was 75, giving a case rate of 0.11 per 1,000 of the gross population. The incidence of typhoid fever over a number of years is a very useful sign of the sanitary condition of a district. The following table shows the steady fall in the case rate of this disease during eleven years down to the very low rate in 1910. It will be seen below how many of the cases notified in that year were due to infection contracted outside the county. The average rate during the ten years 1900 to 1909 was 0.24 per 1,000.

TYPHOID FEVER. WHOLE COUNTY.

Year.	Number of cases notified.	Case rate per 1,000 of gross population.	Year.	Number of cases notified.	Case rate per 1,000 of gross population.
1900	176	0.34	1906	137	0.23
1901	193	0.37	1907	98	0.16
1902	194	0.36	1908	82	0.13
1903	129	0.23	1909	79	0.12
1904	112	0.19	1910	75	0.11
1905	150	0.25			

The following notes relate to the districts in which cases of typhoid fever were notified during 1910.

Barnes U.D. 1 case notified, which proved later to be one of tuberculosis.

Caterham U.D. 2 cases, both in the Metropolitan Asylum.

Chertsey U.D. 3 cases, of which 2 were infected outside the district.

Epsom U.D. 8 cases, all in London County Asylums.

Esher U.D. 3 cases, of which 2 were suspected to have been infected outside the district. The source of infection could not be discovered in any case.

Frimley U.D. 2 cases, of which 1 was infected outside the district, and the other was infected while nursing the first.

Guildford M.B. 1 case, source of infection could not be traced.

Kingston M.B. 9 cases, of which 4 appeared to have been infected outside the county.

Merton U.D. 1 case; the evidence pointed to infection outside the county.

Reigate M.B. 3 cases, all in Earlswood Asylum; it was suspected that a carrier, recently admitted, had introduced the infection.

Richmond M.B. 1 case; source of infection not mentioned.

Surbiton U.D. 3 cases, of which 1 was certainly, and 1 probably, infected outside the county.

Sutton U.D. 3 cases, of which 1 was certainly, and 1 probably, infected elsewhere, and 1 was a doubtful case.

Walton-on-Thames U.D. 2 cases; source of infection not mentioned.

Weybridge U.D. 2 cases, 1 of which was probably infected in Chertsey.

Wimbledon M.B. 9 cases; source of infection not mentioned.

Woking U.D. 1 case, probably infected elsewhere.

Croydon R.D. 16 cases; source of infection not mentioned.

Epsom R.D. 4 cases, of which 1 was infected elsewhere.

Farnham R.D. 1 case, which proved later not to be typhoid fever.

Godstone R.D. 3 cases, of which 2 were infected outside the county, and the third was infected by one of them.

Hambleton R.D. 1 case, infected outside the county.

Reigate R.D. 3 cases, and 2 discovered without notification, making 5 in all, of which 3 were infected elsewhere and 1 was a secondary infection. Two of these patients were infected in a gipsy caravan in which a fatal case had previously occurred in Sussex; the van had been moving about in Sussex and in Surrey for three weeks, probably infecting all the camping grounds. Such recent camping grounds as could be located were dealt with, but attempts to trace the earlier wanderings of the van failed, and it was found that the owners had at least two boards bearing different names for purposes of identification. Dr. Porter says that "such facts suggest the strong possibility that some of the unexplainable sporadic cases of infectious disease that occur in rural districts may be due to nomads."

PUERPERAL FEVER.

The number of cases notified during the year was 35; of these 17, or 48.5 per cent. were fatal. In 1909 the number of cases notified was 21, and the fatality rate was 62 per cent. The average number of cases notified yearly during the ten years 1900—1909 was 24. According to the returns received, 6 cases of puerperal fever occurred in the practice of certified midwives in 1910, that is 17.1 per cent. of all the cases notified. Whether this be the exact figure or not there can be no doubt that the proportion of the notified cases occurring in the practice of certified midwives is low. The following notes relating to the districts in which cases of puerperal fever were notified during the year throw light upon a few of the cases; it would be of advantage to have short particulars upon this subject in all reports.

Barnes U.D. 1 case, proved to have been wrongly diagnosed; the notification was afterwards withdrawn.

Carshalton U.D. 1 fatal case; no particulars given.

Caterham U.D. 1 case; no particulars.

Dorking U.D. 2 fatal cases in one house. The first patient had been attended in her confinement by a certified midwife; the room and bedding were disinfected afterwards. The second case was attended by a monthly nurse, who obtained medical assistance before the birth of the child; the confinement took place in a different room from the first, and it did not appear that any bedding or article used in the first case was used on the second occasion. The two patients were attended by different medical practitioners. The second patient had assisted in nursing the first.

Egham U.D. 1 case; no particulars given.

Esher and the Dittons U.D. 1 case; no particulars.

Guildford M.B. 1 fatal case; no particulars.

Kingston M.B. 2 cases; no particulars.

Maldens and Coombe U.D. 1 case; no particulars.

Merton U.D. 2 cases; no particulars.

Molesey, East and West, U.D. 1 case; no particulars.

Reigate M.B. 1 fatal case; attended by a certified midwife.

Sutton U.D. 2 cases, both fatal. Dr. Habgood says that the disease appears to be exceptionally fatal in Sutton. During the last ten years, of 6 cases notified 5 have died, giving a case mortality of 83 per cent., and in the past nineteen years, of 12 cases notified 9 have died, giving a case mortality of 75 per cent.

Walton-on-Thames U.D. 1 case, attended by a certified midwife, in whose practice a case had occurred in the previous year.

Wimbledon M.B. 1 case; no particulars.

Woking U.D. 2 cases; both followed normal labours.

Croydon R.D. 9 cases, of which 3 were fatal; no particulars.

Godstone R.D. 1 case, "due to accidental contamination; the nurse was free from blame."

Guildford R.D. 3 cases; 2 were fatal, the fever following difficult confinements; the third was in the practice of a certified midwife and was mild in character.

Hambleton R.D. 1 case; no particulars.

PULMONARY TUBERCULOSIS OR PHTHISIS.

The number of deaths ascribed to pulmonary tuberculosis in the county during 1910 was 441, that is 0.68 per 1,000 of the nett population. The death rates in the separate sanitary districts are given on pp. 22 and 23. In 1909 the death-rate in the whole county from this disease was 0.72 per 1,000, and the average rate for the five years 1905 to 1909 was 0.80 per 1,000. The number of people living in the county definitely suffering from the disease cannot be stated; judging from the number of deaths ascribed to it in 1910 there must have been at the lowest estimate 1,500 known cases.

There is a growing tendency to make phthisis a notifiable disease. It is communicable and preventible, but no efficient action can be taken by sanitary authorities towards preventing its spread until all recognised cases are notified. In several districts in Surrey and elsewhere voluntary notification has been tried for several years to little or no effect, the natural inclination of both patients and doctors being averse from notification when that is not compulsory. In 1908 an Order was issued by the Local Government Board making notification of cases occurring in Poor Law institutions compulsory. In 1910 a further Order was issued making notification of all cases treated in public hospitals compulsory. The effect of these two orders is to provide sanitary authorities with information of a large proportion of the cases of phthisis occurring among the poorer classes who seek gratuitous treatment and are most in need of supervision.

Disinfection of rooms and clothing after notice of removal or death of patients is practised in most sanitary districts of the county and is mentioned in most of the reports. The

provision of spitting flasks and disinfectants for poor patients and the distribution of leaflets of instructions are also mentioned in several reports.

There is no provision for the isolation of patients other than the well-to-do in sanatoria and paupers in open air blocks of workhouse infirmaries (*e.g.* : at Farnham, Reigate and Richmond). In the reports of Dr. Belilos, Dr. Crookshank and Dr. Porter special reference is made to the desirability of providing some means of treatment in existing isolation hospitals. Dr. Nash reported adversely to the Wimbledon Borough Council upon a proposal submitted to the constituent authorities of the Joint Smallpox Hospital at Cheam to this effect. Dr. Brind and Dr. Senior advocate the provision of cheap shelters in which patients may be treated at home. Treatment by tuberculin is still in the experimental stage; passing reference is made to it in some reports.

A proposal has this year been made by the Public Health Committee of the County Council to place the three smallpox hospitals in the county under one management, and to use one or more of them for the treatment of phthisis during inter-epidemic periods, reserving one exclusively for smallpox at all times. This proposal is still under consideration by the various authorities concerned. The main object of hospital treatment by sanitary authorities, however provided, should be educational rather than curative.

PLAUE.

In consequence of an outbreak of plague among rodents, affecting also human beings, in East Anglia, an Order was issued by the Local Government Board in November, 1910, authorising expenditure by district sanitary authorities

upon destruction of rats and prevention of their entrance into buildings and other premises.

Following upon this order suggestions were made in several quarters that a joint campaign should be undertaken against rats by all the sanitary authorities in Surrey. Such a proposal, affecting one county only, and that a county free from plague, was open to weighty objections.

After careful consideration an alternative course was suggested, namely the destruction of a limited number of rats in the sanitary districts in the Thames Valley, the systematic veterinary examination of the carcases, and the further bacteriological examination (undertaken by the Local Government Board) of any carcases found to show suspicious appearances. This suggestion was based upon the supposition that if rat plague were introduced into Surrey it would probably be by means of infected rats coming up the Thames in barges. Any positive evidence of plague found among rats in the riverside districts would have been the signal for further preventive measures. The results of the examinations were fortunately negative in all the districts in which the suggestion was adopted. No unusual mortality among rats was reported in any sanitary district.

Inquiry was made in November into the means of isolation available for plague in the event of an outbreak in Surrey. The replies received showed that (1) in 10 districts empty smallpox hospitals might possibly be used, failing them, the ordinary isolation hospitals; (2) in 24 districts empty wards of ordinary isolation hospitals could be used; and (3) in 2 districts no hospital accommodation would be available, but the patients would have to be isolated in their own homes. In one of these two districts a new isolation hospital is now available.

CEREBRO-SPINAL FEVER.

One case of cerebro-spinal fever was notified during the year, in the urban district of Barnes. No particulars were reported.

MEASLES.

Measles was unusually prevalent during the second and fourth quarters of 1910. It is notifiable in four districts, viz.:—the urban districts of Farnham, the Maldens and Coombe, and Merton, and the rural district of Farnham. In the elementary education area of the County (that is the Administrative County, excluding the boroughs of Guildford, Kingston-upon-Thames, Reigate, Richmond and Wimbledon) 1,354 children were excluded from school owing to measles, and 19 schools were closed by reason of outbreaks of the disease.

The number of deaths ascribed to measles during the year was 27, that is 0.04 per 1,000 of the nett population. This is an unusually low death rate, from which it may be inferred that the prevailing type of the disease was mild. Of these deaths 22, or 81 per cent., were among children under five years of age. The death rate in 1909 was 0.21 per 1,000, and the average annual death rate during the five years 1905 to 1909 was 0.17 per 1,000.

Measles is a disease of school age, spreading chiefly in public elementary schools owing to the carelessness and ignorance of parents. For dealing with it close co-operation between the education and sanitary authorities is essential; arrangements for this have been in force in Surrey since 1905. For the education of parents leaflets are distributed by some sanitary authorities in their own districts, and in many schools by the County Education Committee. Home visits are much more useful, but they cannot be paid

systematically in many districts without increase of staff. The means of isolation of selected cases would do much to save life, but these means are not available in any district in Surrey.

Maldens and Coombe U.D. Measles has been notifiable in this district for fifteen years. During that time 1,656 cases have been notified of which 16 have died, giving a death rate of 1 per cent. of the notified cases. Dr. Davison states that the means adopted for dealing with the disease after notification are (1) distribution of printed leaflets of directions, and (2) disinfection of rooms and clothing after the illness, in addition to the action taken in the schools. He considers that disinfection has had little or no effect on the spread of the disease, but he believes that notification has had a practical effect in ensuring that most cases are seen early by a doctor. [In most districts parents of the poorer classes do not think of calling in a doctor for measles; Malden appears to be exceptional in this respect.]

Reigate M.B. Dr. Porter gives particulars of school closures, and states that such wholesale measures would probably not be necessary if the epidemic grant were still in existence.

Wimbledon M.B. Dr. Nash reports that when schools are closed during outbreaks of measles parents are asked to notify any new cases in their families to the head teachers, and home visits are paid by the school nurse in such cases. Dr. Nash considers that this is not enough, and suggests that means of isolation should be provided for cases suffering from pneumonia and other serious complications.

WHOOPING COUGH.

Whooping Cough was very prevalent during the second and fourth quarters of the year. In the elementary educa-

tion area of the County 1,741 children were excluded from school owing to this disease, and 22 schools were closed by reason of outbreaks of it.

The number of deaths ascribed to whooping cough during the year was 94, that is 0.15 per 1,000 of the nett population. Of these 87, or 92 per cent., occurred among children under five years of age. The death rate in 1909 was 0.10 per 1,000, and the average annual death rate during the five years 1905 to 1909 was 0.17 per 1,000.

Whooping cough, like measles, is too often regarded as a trivial disease, although its death rate is generally one of the highest among the seven principal zymotic diseases. For example, Dr. Habgood of Sutton, says "excepting diarrhœa this has been the most fatal disease in the district during the past 33 years." Improvement must be sought chiefly through gradual education of parents in the proper care of their children.

ISOLATION HOSPITALS.

A. FOR DISEASES GENERALLY ISOLATED, VIZ.:—SCARLET FEVER, DIPHTHERIA AND TYPHOID FEVER.

There are now 17 isolation hospitals to serve the needs of the Administrative County; of these 9 serve single sanitary districts and 8 are joint hospitals (7 situated in Surrey and 1 in Middlesex). Thirty-four sanitary districts are provided with isolation hospital accommodation either separately or in formal combination with neighbouring districts; two districts (Caterham U.D. and Hambledon R.D.) send their patients to joint hospitals within the county by arrangement, though they are not formally combined for the pur-

pose. This accounts for 36 of the 37 sanitary districts of the County. The important borough of Kingston-upon-Thames, with a population of 37,977 at the census of 1911, is still without an isolation hospital, and is not formally combined with any other district for isolation purposes, although arrangements are in force for the admission of a limited number of patients into the hospital of a neighbouring district in Middlesex.

The following statement shows the situation of the 17 hospitals, the districts served by them, and the accommodation provided in them, the populations given being those of the districts in 1910 after deduction of inmates of public institutions for whom other provision is made.

Nine hospitals serving single sanitary districts; two newly opened.

(1) *Barnes U.D.* Within the district. Beds 40, for population 29,437, *i.e.*, 1.4 per 1,000.

(2) *Egham U.D.* New hospital, opened in 1911. Within the district. Beds 10, for population 12,121, *i.e.*, 0.8 per 1,000.

(3) *Epsom U.D.* Within the district. Beds 22, for population 13,360, *i.e.*, 1.6 per 1,000.

(4) *Frimley U.D.* Within the district. Beds 10, for population 13,276, *i.e.*, 0.8 per 1,000. This hospital is for scarlet fever only.

(5) *Molesey, E. and W.* New hospital, opened in 1911. Within the district. Beds 16, for population 6,465, *i.e.*, 2.5 per 1,000.

(6) *Reigate, M.B.* Borough Hospital, Whitebushes. Beds 38, for population 27,588, *i.e.*, 1.4 per 1,000.

(7) *Wimbledon, M.B.* Within the district. Beds 36, for population 53,751, *i.e.*, 0.7 per 1,000.

(8) *Godstone R.D.* At Blechingley, within the district. Beds 34, for population 22,352, *i.e.*, 1.5 per 1,000.

(9) *Reigate R.D.* At Whitebushes, within the district. Beds 18, for population 19,961, *i.e.*, 0.9 per 1,000.

Eight joint hospitals.

(1) *Croydon R.D. and Merton U.D. Joint Hospital.* At Beddington Corner in Croydon R.D. Beds 100, for population 71,001, *i.e.*, 1.4 per 1,000. Into this hospital are also admitted patients from Caterham U.D. (population 8,174), by arrangement.

(2) *Cuddington Joint Hospital*, in Epsom R.D., serving Carshalton U.D., Leatherhead U.D., Sutton U.D., and Epsom R.D. Beds 52, for population 61,584, *i.e.*, 0.8 per 1,000.

(3) *Dorking U. and R. Joint Hospital*, at Westcott, in Dorking R.D. Beds 27, for population 18,360, *i.e.*, 1.5 per 1,000.

(4) *Farnham U. and R. Joint Hospital*, Weydon Hill, in Farnham U.D. Beds 40, for population 27,284, *i.e.*, 1.5 per 1,000. Into this hospital are also admitted patients from Hambledon R.D. (population 25,092), by arrangement.

(5) *Ottershaw Joint Hospital*, in Chertsey U.D., serving Chertsey U.D., Walton-on-Thames U.D., Weybridge U.D., Windlesham U.D., and Chertsey R.D. Beds 27, for population 45,885, *i.e.*, 0.6 per 1,000.

(6) *Tolworth Joint Hospital*, in Surbiton U.D., serving Esher and the Dittons U.D., Ham U.D., Maldens and Coombe U.D., and Surbiton U.D. Beds 40, for population 42,870, *i.e.*, 0.9 per 1,000.

(7) *Woodbridge Joint Hospital*, Guildford, serving Godalming M.B., Guildford M.B., Woking U.D., and Guildford R.D. Beds 60, for population 73,590, *i.e.*, 0.8 per 1,000.

(8) *Mogden Joint Hospital*, in Middlesex, serving Richmond, M.B., in conjunction with Heston and Isleworth U.D., Middlesex. Beds 45, for population 69,415, *i.e.*, 0.6 per 1,000. (Can be made up to 61 beds, *i.e.*, 0.9 per 1000).

The following short statement facilitates reference by showing the provision for each sanitary district in the county.

Barnes U.D. Hospital in the district.

Carshalton U.D. Cuddington Joint Hospital, in Epsom R.D.

Caterham U.D. Patients sent to Croydon R. and Merton Joint Hospital, in Croydon R.D., by arrangement.

Chertsey U.D. Ottershaw Joint Hospital, in the district.

Dorking U.D. Dorking U. and R. Joint Hospital, in Dorking R.D.

Egham U.D. A new hospital, opened in 1911, in the district.

Epsom U.D. Hospital in the district.

Esher and the Dittons U.D. Tolworth Joint Hospital, in Surbiton U.D.

Farnham U.D. Farnham U. and R. Joint Hospital, in the district.

Frimley U.D. Hospital in the district, for scarlet fever only.

Godalming M.B. Woodbridge Joint Hospital, Guildford.

Guildford M.B. Woodbridge Joint Hospital, in the district.

Ham U.D. Tolworth Joint Hospital, in Surbiton U.D.

Kingston-upon-Thames M.B. Limited number of patients sent to Hampton Isolation Hospital, Middlesex, by arrangement. Practically restricted to scarlet fever; only one case of diphtheria sent during the year. Typhoid fever, not sent to Isolation Hospital; some cases treated in Kingston General Hospital.

Leatherhead U.D. Cuddington Joint Hospital, in Epsom R.D.

Maldens and Coombe U.D. Tolworth Joint Hospital, in Surbiton U.D.

Merton U.D. Croydon R.D. and Merton Joint Hospital, in Croydon R.D.

Molesey E. and W. U.D. A new hospital, opened in 1911, in the district. In 1910 patients were sent to the Tolworth Joint Hospital.

Reigate M.B. Borough Hospital, Whitebushes, in Reigate R.D.

Richmond M.B. Mogden Joint Hospital, Middlesex.

Surbiton U.D. Tolworth Joint Hospital, in the district.

Sutton U.D. Cuddington Joint Hospital, in Epsom R.D.

Walton-on-Thames U.D. Ottershaw Joint Hospital, in Chertsey U.D.

Weybridge U.D. Ottershaw Joint Hospital.

Wimbledon M.B. Borough Isolation Hospital, Gap Road.

Windlesham U.D. Ottershaw Joint Hospital.

Woking U.D. Woodbridge Joint Hospital, Guildford.

Chertsey R.D. Ottershaw Joint Hospital.

Croydon R.D. Croydon R.D. and Merton Joint Hospital, in the district. A new extension was opened in 1910, with accommodation for a resident medical officer.

Dorking R.D. Dorking U. and R. Joint Hospital, at Westcott, in the district.

Epsom R.D. Cuddington Joint Hospital, in the district.

Farnham R.D. Farnham U. and R. Joint Hospital, in Farnham U.D.

Godstone R.D. Isolation Hospital, Bletchingley, in the district. Several improvements in 1910, including much needed improved accommodation for the nursing staff.

Guildford R.D. Woodbridge Joint Hospital, Guildford.

Hambleton R.D. Patients sent to Farnham Joint Hospital, by arrangement, if places available.

Reigate R.D. Isolation Hospital, Whitebushes, in the district.

With regard to isolation hospital administration in 1910, one point must be mentioned, namely, that the particulars given of return cases (*i.e.* cases of infection following the return to their homes of patients treated in isolation hospitals) in the reports of the medical officers of health of Epsom U.D., Leatherhead U.D., Sutton U.D., and Epsom R.D., show that an undue number of such cases followed

the discharge of patients from the Cuddington Joint Isolation Hospital. In consequence of complaints made in 1909 the Local Government Board instituted an inquiry into the administration of the hospital, and in December, 1910, sent a letter to the Joint Hospital Board upon the subject, making ten definite recommendations for its improvement. Special attention was drawn to a paragraph in the letter urging upon the Joint Hospital Board the need of obtaining the advice and co-operation of the medical officers of health of the constituent districts in the administration of the hospital, and to the importance of careful investigation of the history of every return case in the light of statements thereon both of the medical officer of the hospital and of the medical officer of health concerned. I understand that this letter is still under the consideration of the various authorities.

B. FOR SMALL POX.

All the districts in the Administrative County are now provided with satisfactory isolation hospital accommodation for smallpox. Three hospitals within the county serve 35 of the sanitary districts; a hospital in Middlesex serves the remaining district.

(1) Surrey Smallpox Hospital, Clandon, in Guildford R.D. Beds 21, in permanent buildings; foundations ready for immediate temporary extensions if required. Serves 27 districts, viz.:—Urban, Barnes, Carshalton, Caterham, Chertsey, Dorking, Egham, Epsom, Esher and the Dittons, Farnham, Frimley, Ham, Kingston, Leatherhead, Maldens and Coombe, Molesey E. and W., Reigate, Surbiton, Sutton, Walton, Weybridge, Windlesham; Rural, Chertsey, Dorking, Farnham, Godstone, Hambleton, Reigate.

(2) Croydon and Wimbledon Joint Smallpox Hospital, North Cheam, in Epsom R.D. Beds 50, and 8 cots, in permanent buildings; foundations ready for immediate temporary extensions if required. Serves 4 districts in the Administrative County, viz.:—Wimbledon M.B., Merton U.D., Croydon U.D., and Epsom R.D. (as well as Croydon C.B. and Penge U.D. outside the County).

(3) Guildford, Godalming and Woking Joint Smallpox Hospital, Whitmoor Common, Worplesdon, in Guildford R.D. Beds 10, in permanent buildings; more can be provided if required. Serves 4 districts, viz., Godalming M.B., Guildford M.B., Woking U.D. and Guildford R.D.

(4) Dockwell Smallpox Hospital, Middlesex, serves Richmond M.B. (jointly with Heston and Isleworth U.D., Middlesex). Beds 16, more can be provided if required.

HOUSING OF THE WORKING CLASSES.

The Housing, Town Planning, etc., Act, 1909, which came into force on December 3rd of that year has caused increased activity in dealing with housing conditions in most sanitary districts. Under this Act it became the duty of sanitary authorities to provide for the systematic inspection of all houses let under a certain rental, to keep detailed records of the conditions found, to consider these records periodically, and to take any necessary action to remedy unwholesome conditions. The powers of sanitary authorities for dealing with unhealthy houses have been much increased; closing orders, formerly issued only by courts of summary jurisdiction, are now to be issued by the sanitary authorities themselves in respect of houses neglected after notice given of unhealthy conditions, the owner's right of appeal

being to the Local Government Board. Under this Act also increased powers are given to local authorities finding a deficiency of housing accommodation in their districts, and seeing no likelihood that such deficiency will be met by private enterprise, to make and to carry into effect adequate building schemes.

The first year of the working of the Act has naturally been devoted in most districts to the preparation of means of systematic inspection and to the consideration of the facts disclosed by inspection. This must be a slow process; indeed it is evident that some authorities have not yet been able to provide adequate means for the greatly increased task of inspection and keeping of records which they are called upon to undertake. Energetic action with regard to individual houses is recorded in many districts, and this may be expected to continue. Clearly the main object of all procedure under the Acts should be improvement and increase in housing accommodation. The mere closure of dilapidated houses, when not followed by their repair or by the provision of new houses in their stead, may prove to be a measure of very doubtful benefit, leading often to worse evils than it seeks to remedy.

In urban districts, as a general rule, no great lack of accommodation is reported, but rents are often out of proportion with wages. Among the difficulties revealed by inspection are dilapidated condition of some old houses, bad building of many new houses, the sub-division into tenements of houses unprovided with conveniences for such a purpose, and the dirty habits of many tenants.

In most rural districts the reports of medical officers of health show that more cottage accommodation is greatly needed. How that is to be provided at rents within the reach of the poorer classes is an economic problem whose

solution will have a far reaching effect upon the public health. It is not to be expected that the solution will be reached quickly.

The adoption of building schemes in rural districts, involving outlay by the general body of ratepayers for the housing of some among them, is not likely to become general unless pressure be applied from without, although the necessary capital can be raised by local authorities at a low rate of interest and the outlay may prove to be not unremunerative. One local authority, the Chertsey Rural District Council, has been called upon by the Local Government Board to provide certain housing accommodation for the working classes in the village of Thorpe, after an Inquiry held in December, 1910. (See Chertsey R.D., p. 67). This is the first and so far the only Inquiry of the kind held in Surrey.

Many of the district reports upon housing contain valuable information, as will be seen from the summaries given below.

Barnes U.D. Arrangements were made in November for putting into force the Housing (Inspection of District) Regulations issued by the Local Government Board in September, 1910, the Sanitary Inspector being appointed to carry out the inspections.

Dr. Crookshank reports that two houses were closed by order of the Council under the Housing and Town Planning Act, 1909, and were subsequently demolished; also that certain other disused buildings in Mortlake were demolished as a result of a representation made by him under the Housing of the Working Classes Act, 1890. He refers to the deliberations of a sub-committee appointed to consider the question of improvement of an area known as the Malthouse

Area, and states that no action had been taken in the matter before the end of the year. He refers also to certain works of demolition of old property and road widening undertaken at Littleworth End.

Carshalton U.D. The Sanitary Inspector was appointed to carry out the inspections under the Housing (Inspection of District) Regulations. A house to house inspection was made in one road and various defects were remedied. One cottage was pulled down under a demolition order issued by the Council. A row of old cottages, closed some years previously, was also demolished. A special inspection was made of all premises draining into cesspools, and 88 houses within the drainage area were found not connected with the sewers.

Caterham U.D. Two cases of overcrowding were dealt with. Two cottages were condemned as unfit for habitation in consequence of their dilapidated condition. No mention is made of action taken under the Housing (Inspection of District) Regulations.

Chertsey U.D. Systematic inspections of the district under the new Regulations were not begun during the year, but the necessary arrangements were made for beginning them in 1911, the Sanitary Inspector being appointed to carry out the inspections.

Dr. Brind reports that in consequence of a representation made by him as to a semi-detached house unfit for habitation on account of wet walls, a closing order was made by the Council, whereupon the house was vacated, and the adjoining house, also insanitary, was closed by the owner. Three cottages found to be unfit for habitation were not closed by formal order, the owner carrying out the work necessary to abate the nuisances found. Dr. Brind men-

tions that in one four-roomed cottage that he visited two rooms were let at 7/- a week, one at 5/3, and one at 5/10, all wretchedly furnished; these are examples of the exorbitant rents obtained for sub-let rooms. Seventeen cases of overcrowding were dealt with and remedied.

Dorking U.D. The Sanitary Inspector was appointed to carry out the inspections under the new Regulations.

A report was made upon 12 old cottages built into the sides of hills so that the back walls were almost entirely under ground, and the inspector was instructed to confer with the owners with a view to devising a scheme to mitigate the insanitary conditions. The owners of 5 cottages reported as insanitary closed them upon receipt of notices from the Council to carry out improvements. Eight other cottages reported as insanitary were improved by the owner, who re-constructed them in such a way as to make the 8 dwellings into 6. A house to house inspection in various parts of the district was made during the year.

Egham U.D. Dr. Cattell states: "The houses occupied by the working classes in this district compare on the whole favourably with those of the surrounding districts. A careful record is being made of all such dwellings, of which there appears to be an adequate supply."

Epsom U.D. The Sanitary Inspector was appointed to carry out the inspections under the new Regulations, and a list of houses requiring early inspection was prepared by the Medical Officer of Health at the end of the year.

Two insanitary dwellings were closed by the owners, and 20 damp and insanitary cottages were repaired. Three cases of overcrowding were abated.

Esher and the Dittons U.D. Fifty-eight houses were inspected under the new Regulations, one of which was

found to be unfit for habitation and was voluntarily closed by the owner. Many slight defects were found and remedied by the owners. Eighty-seven re-inspections were made. Dr. Senior did not find it necessary to advise any action during the year under any section of the Housing of the Working Classes Acts, but one dwelling house reported to be in bad repair was closed by the owner. Reference is made to the high rents (7/6 to 12/- a week) charged for newer cottages, beyond the means of the working classes, leading to the sub-division into tenements of houses not designed for that purpose. With reference to the sufficiency of house accommodation in the district Dr. Senior says, "the houses provided for the working classes are quite sufficient for the number of people wanting them."

Farnham U.D. 135 cottages were inspected during the year; special detailed reports were made upon 31 of them; the Council took action in consequence of some of the reports, and had the others under consideration at the end of the year. Many of the houses were repaired by the owners as a result of the inspections. One case of overcrowding was discovered and abated. Dr. Sloman reports that in the older part of the town there is some crowding together of the houses, and that there are many very small, ill-paved, sunless and airless back yards.

Frimley U.D. Dr. Cadell reports that the requirements of the new housing inspection Regulations have been anticipated for a considerable time, systematic inspection of small houses having been in force in the district for six years. The Sanitary Inspector was appointed to carry out inspections under the Act. 167 houses were inspected during the year, of which 1 was closed by order of the Council, 116 were improved by the owners upon receipt of lists of defects, 1 was put into a fit state after a closing order had been made, and 4 were closed voluntarily.

Godalming M.B. Dr. Bird reports that the supply of housing accommodation in the borough is at last meeting the demand. Two cases of overcrowding were dealt with by statutory notices and abated without further proceedings. Systematic district inspections were made during the year, as a result of which 8 insanitary houses were put into proper repair after receipt of statutory notices by the owners.

Guildford M.B. Dr. Pierce made a special report in April, 1910, in which he stated his opinion that there was a great scarcity of cheaply rented cottages in the borough, that private enterprise did not seem to be supplying the need, and that therefore it seemed desirable that the Council should extend its scheme in Clive Road by building additional cottages. The Council decided that no action was necessary, but later referred the matter to a special committee which was considering it at the end of the year. Dr. Pierce considers that provision is especially needed for the numerous people unable to pay the average rental of 6/6 to 8/6 a week and at the same time to obtain proper food and clothing, of whom a sub-section are undesirable tenants, not in constant work, thriftless and untidy, often with large families, likely to need constant supervision in their dwellings.

Dr. Pierce draws attention to the fact that low-lying and water-logged ground is the only land available for building cottages such as can be let at low rents; this he regards as a serious menace to the future health of the inhabitants.

The Sanitary Inspector was appointed to make the inspections under the new Regulations of the Local Government Board, and 2 streets were inspected under these regulations. Similar house to house inspections have been carried out in the borough for many years, and many streets were inspected in 1910 before the new regulations were issued. During

the house to house inspections many defects were found with respect to which statutory notices were issued; Dr. Pierce mentions as unfortunate results of these notices that six tenants were required to quit before the owners would put the premises into proper repair, and that the rents were raised in some cases. A very common defect found in the course of the inspections was the absence of a proper food store. Three cottages were represented as unfit for habitation during the year and were closed by order of the Council; considerable difficulty was experienced in getting rid of the tenants from two of these houses. A row of cottages reported to be unfit for habitation in 1909 were put into a more or less satisfactory state of repair in 1910. A double tenement reported unfit for habitation in 1909 remained still unrepairs, the Council having served a notice under the Housing of the Working Classes Act, 1890, requiring certain works to be done, out of consideration for the owner and tenants, instead of applying for a closing order at once. Six cases of overcrowding were dealt with during the year; Dr. Pierce remarks that these probably represented only a proportion of the cases existing. All the public houses in the borough were inspected during the year; although many minor defects were found the sanitary condition of the premises was, speaking generally, very satisfactory; all the notices to remedy defects were complied with by the owners before the end of the year.

Ham U.D. Dr. Donald reports that the number of houses remained the same as in 1909 and was sufficient for the population. No reference is made to house inspection under the new Regulations.

Kingston-upon-Thames M.B. The Sanitary Inspector was appointed a whole time officer and designated as the inspector under the Housing Regulations. A preliminary

inspection was made during the year of several groups of houses. Six houses were put into proper repair by the owner, and several other houses were being re-drained and provided with paved approaches at the end of the year.

Leatherhead U.D. A house to house inspection was made in one road and some minor defects were found. No mention is made of action under the Housing Inspection Regulations.

Maldens and Coombe U.D. The Sanitary Inspector was appointed to carry out the inspections under the new Regulations. Many houses were inspected during the year both before and after the issue of the regulations and defects found were remedied without recourse to legal proceedings. No notices were served during the year under the Housing of the Working Classes Act, 1890.

Merton U.D. Revised by-laws dealing with the erection of new houses were approved by the Local Government Board during the year.

The Sanitary Inspector was appointed inspector under the Housing Regulations. No mention is made of the results of inspections.

Molesey, E. and W., U.D. A house to house inspection was begun during the year, 300 houses being inspected, and preliminary notices requiring improvements being served in respect of 260 of them. House accommodation is said to be ample. The chief fault in connexion with dwellings of the cottage class is said to be lack of cleanliness of the surroundings.

Reigate M.B. Systematic inspection of cottage houses had been undertaken before the issue of the Regulations of the Local Government Board; 123 houses were inspected

and many of them re-inspected in March and June. In October the Sanitary Inspector was appointed to make the inspections under the new Regulations, and a scheme was prepared by the Medical Officer of Health which included provisionally the annual inspection of one-fifth of the 3,700 houses in the borough assessed at £20 or under. Dr. Porter draws attention to the greatly increased clerical work required by the new regulations.

During the year 185 houses were completely inspected and 219 were partially inspected, as a result of which many defects were remedied by the owners. No houses were formally reported unfit for habitation, but 6 insanitary cottages were voluntarily closed by the owners.

Dr. Porter considers that the rent limit of £16, fixed under sections 14 and 15 of the Housing and Town Planning Act, 1909, for a town with a population under 50,000, facilitating procedure for securing the repair rather than the closure of dilapidated cottages, will make the powers conferred by those sections useless in a town like Reigate, where the rents are as high as those in much larger towns. He goes on to say "Some of the oldest cottages let at 5/- to 5/6, but the number of them is very small. A few are let at 7/-, but 8/- a week is a very usual rent for cottages by no means new and provided with three bedrooms, newer ones commanding still higher figures. While some of the more expensive ones are not infrequently untenanted for short periods, the cheaper ones are re-occupied at once, and I strongly recommend the Council, if dealing with an area under the town-planning portion of the Act, to consider whether cottages of various sizes, and embracing a few at about 6/-, could not be included upon the area on garden suburb lines." He suggests that the remainder of an estate of 28 acres, recently bought by the Council, subject to the

consent of the Local Government Board, of which a portion is intended for the site of a secondary school, might be developed as a garden suburb for the erection of cheap cottages.

Richmond M.B. Dr. Crocker reports that the dwellings comprising ten double tenements to accommodate 100 persons on the Artichoke Alley site, now called Victoria Place, were completed during the year, and that all the houses were occupied. The 135 houses erected by the Corporation under the Housing of the Working Classes Act, 1890, part III., had been kept in a satisfactory condition and were all occupied; the same applied to the 40 dwellings erected at North Sheen to comply with the regulations of the Local Government Board in connexion with the demolition of buildings on the Red Lion Street area.

Steps were taken at the end of September for complying with the requirements of the Housing (Inspection of District) Regulations.

Four houses found to be unfit for habitation were closed and repaired by the owners without the issue of closing orders by the Council.

Surbiton U.D. The necessary steps were taken for carrying out the requirements of the Housing (Inspection of District) Regulations.

No houses were reported as unfit for habitation during the year, all action in this respect being deferred until 1911.

Sutton U.D. Dr. Habgood reports that "there is an ample supply of good cottages, chiefly from 6/- to 10/- per week rental, and it is noticeable how few are supplied with properly lighted and ventilated store places for food."

No action under any part of the Housing of the Working Classes Act, 1890, was taken or needed during the year. House inspections made before the issue of the new Regulations had been fairly complete, and there were very few houses in which there had been any difficulty in getting the owners to carry out the necessary repairs. Dr. Habgood adds that "greater difficulty is encountered in dealing with careless tenants than with owners, and the Health Department finds the amending of ordinary nuisances a simple matter compared with the cleansing of houses, bedding and clothes infested with vermin."

Walton-on-Thames U.D. The necessary steps were taken for putting into effect the Housing (Inspection of District) Regulations. No houses were reported as unfit for habitation during the year.

Weybridge U.D. The necessary steps were taken for putting into effect the new Regulations. Inspections were made of 307 houses during the year, in which the defects found were remedied without recourse to legal proceedings.

Wimbledon M.B. The Sanitary Inspector was appointed to make inspections under the Housing (Inspection of District) Regulations.

Dr. Nash reports that practically all the property which would have to be dealt with under section 17 of the Act of 1909, had already been regularly inspected, and the report of the Sanitary Inspector states that the records of such house to house inspections of some 1,700 houses inspected in previous years included all the details required by the new regulations. During 1910, 406 houses were inspected, and necessary repairs were carried out by the owners. The Inspector finds that the existing powers under the Public Health Acts are enough for securing the abatement of

nuisances arising from structural defects, but are often inadequate to deal with many of the results of personal neglect and abuse by the tenants.

Windlesham U.D. The Sanitary Inspector was designated as the officer to make inspections under the new Regulations.

Closing orders were made by the Council in respect of 5 cottages, as a result of which 3 of them were voluntarily demolished by the owners, 1 was made fit for habitation, and 1 remained empty.

Woking U.D. The whole of the district was inspected on five occasions during the year by the Sanitary Inspector to find out the number of empty cottages letting at under 9/- a week inclusive, and it varied from 12 to 23. Dr. Pierce says "There can be no question that there are a large number of families in this district who are unable—with due regard to the necessary expenditure on food and clothing—to pay the rents in vogue. Many of these consequently have to share a house with another family, and this leads to overcrowding and other evils. The average rental (inclusive of rates) for a cottage with three bedrooms would be probably between 7/6 and 8/6 a week, excluding the older cottages in the outlying parts of the district, and it is obvious that these rents are above the means of many of the labouring classes. This state of things is, of course, very unsatisfactory, and it appears to me to be urgently necessary that the disproportion between the income of the poorer of the working classes and the rents they have to pay should by some means or other be diminished."

Woking is for the most part new and there are not many old and insanitary cottages; such as do exist are situated in the outlying parts, not in any congested areas. There are

several rows of comparatively new cottages badly built, not properly looked after by the owners, and housing many of the least desirable of the inhabitants. One such row of 8 houses has been taken over by an Association which lets the houses to struggling and deserving families, and keeps a strict supervision over the cottages through lady visitors. The rental of each house was formerly 7/- and is now 6/6 a week; the tenants earn from 16/- to 20/-; no lodgers are allowed without special consent. A return of 3 per cent. only is expected by the Association, which proposes to take over other houses later. Dr. Pierce suggests that the Council might take over some houses and deal with them in the same way.

Three cottages were reported as unfit for habitation during the year and closing orders were issued in respect of them; one was subsequently repaired and two were closed permanently.

Chertsey R.D. The Sanitary Inspector was appointed to carry out the inspections under the Housing (Inspection of District) Regulations. Dr. Brind reports that representations were made in April that 3 houses in Thorpe were unfit for human habitation; 1 of these was repaired by the owner, the other 2, being probably beyond proper repair, were closed, but had not been demolished at the end of the year.

Dr. Brind devotes a large part of his general report to the housing question and to the practical applications of the Act of 1909. Referring to the high rents of cottages he points out that there has been a steady increase in the amount of house rent in recent years without a corresponding increase in the wages of the unskilled labourer, and that it is impossible for a labourer with his wife and family to be tolerably well fed and clothed when he has to pay out an unduly large proportion of his wages in house rent. He

considers that "such a condition can only be remedied by either a reduction in the amount of house rent or an increase in the present rate of wage."

A complaint was made to the Local Government Board under section 10 of the Housing, Town Planning, etc., Act, 1909, by four inhabitant householders of the rural district that the local authority had failed to exercise its powers under Part III. of the Housing of the Working Classes Act, 1890, in regard to the provision of accommodation for the housing of the working classes in the Parish of St. Mary, Thorpe, in a case where those powers ought to have been exercised. In consequence of this an Inquiry was held on December 14th, 1910, at Thorpe. In February, 1911, the decision of the Local Government Board was announced, stating that need of further houses in the village had been proved, that the Rural District Council ought to take action to provide the necessary accommodation without delay, that the houses built should provide three bedrooms, that twelve houses would be required at once and possibly more later, and that the Board requested an answer within a month as to whether the Council would submit proposals on these lines with a view to their being carried into full effect during 1911. Since then the Rural District Council has taken steps to comply with these requirements.

Dr. Brind reports that in Byfleet, where many houses of a rental value of £120 and upwards have lately been built, the accommodation for chauffeurs, gardeners and men employed in the building trade has been insufficient. Some of the residents in the parish, having devoted attention to the matter, formed a Public Utility Society registered as the Byfleet Tenants Limited. The Society has acquired $3\frac{1}{2}$ acres of land close to Byfleet Station, with the option of buying other 3 acres adjoining. Upon this land the Society

proposes to build 33 cottages and a building containing 14 two-roomed flats. Part of the purchase money for the land was borrowed from the Public Works Loan Commissioners at $3\frac{3}{4}$ per cent. interest, the capital being repayable in 40 years. The interest and repayment of capital is stated to work out at £4 17s. 0d. per cent. per annum, payable in half yearly instalments. The cottages were being built at the beginning of 1911 in blocks of 2, 3, 4 and 6, each containing from four to six rooms, exclusive of larder, scullery and the usual offices. Four roomed cottages are to have one large living room and three bedrooms; larger cottages are to have parlour as well. Nearly all the smaller cottages will be provided with baths, and the larger cottages with bath rooms. The flats are to be on the same lines as those of the Hampstead Garden City, and will consist each of one large living room with bed recess, scullery, larder, coal shed and water closet. Each cottage and flat will have a kitchen range, a boiler giving a continuous hot water supply, and a supply of electric light on reasonable terms. Ample provision is to be made for gas cooking. The amount of rent to be charged had not been fixed when Dr. Brind's report was written. It had been decided to make the tenants pay the rates directly, with a view to inducing them to take a personal interest in the administration of local affairs. The dividends of the Society are not to exceed 5 per cent.; any revenue over and above this is to be used for the benefit of the tenants.

Croydon R.D. During the year 26 houses were dealt with under the Housing of the Working Classes Acts. Of these 20 were put into proper repair by the owner, 4 were closed by order of the Council, and the remaining 2 were voluntarily closed and remained so at the end of the year.

Inspections under the new Regulations of the Local Government Board were carried out by the Sanitary Inspectors; 117 house to house inspections were made during the year.

Dorking R.D. The Medical Officer of Health made a formal representation in April that one cottage was not reasonably fit for human habitation; the cottage was vacated soon after the end of the year, and the owner intimated his intention to do the necessary repairs. Various inspections were made by Dr. Williamson in connexion with complaints as to houses and drainage of premises, but no formal action needed to be taken by the Council in any case other than the one above mentioned.

The Sanitary Inspector was appointed to carry out inspections under the new Regulations.

Epsom R.D. Many houses were inspected in several parts of the district, but it was not found necessary to make any representations under the Housing Acts. The occupier of a house in Worcester Park was prosecuted and an order was obtained to abate overcrowding, which was complied with. The Council dealt with many cases of failure to comply with the by-laws with respect to new buildings.

The two Sanitary Inspectors were appointed to carry out inspections under the new Regulations.

Farnham R.D. Dr. Tanner reports that cottage accommodation for the working classes is still badly needed. He fears that the effect of more strict regulations will be to close some small houses and to raise the rents of others. He draws attention to the small amount of ground attached to some cottages and houses in the district, which is entirely inadequate for the disposal of sewage. The Council has

applied to the Local Government Board for permission to make a by-law compelling the provision of sufficient ground for sewage disposal around houses, but cannot obtain either its consent or its promise to institute legislation upon the subject. "Hence," remarks Dr. Tanner, "the expensive system of drainage being adopted in a large part of the district, and hence again another cause, I fear, for increased rentals in the future."

The Sanitary Inspector was appointed to make inspections under the new Regulations.

Godstone R.D. Dr. Robertson points out that "the main difficulty in dealing with cottage property, especially old cottage property, when any sanitary defects arise, lies in the fact that much old property is let to tenants to bring in an income to a landlord himself not well enough to do to keep the cottages in the best condition. Cottage property connected with large estates is usually kept in good repair. . . . Much of the cottage property in the district is in the hands of small owners."

The Sanitary Inspector has been appointed to make the inspections under the new Regulations. Inspections were made in Lingfield and in Tatsfield during the year.

Dr. Robertson gives in his report a short summary of the housing conditions in each parish and village in the district. He considers that lighting and ventilation are as important as water supply for the health of the inmates. Want of cleanliness and overcrowding are great evils in some parts of the district, the latter being especially due to the introduction of lodgers and of town children for country holidays.

Guildford R.D. The Sanitary Inspector was appointed to carry out the inspections under the new Regulations.

The Medical Officer of Health reported 9 dwellings as unfit for human habitation. In one case no closing order was issued in the first instance owing to the contention of the owner that the cottage could be made habitable and the repairs dragged on for eight months in consequence, whereas Dr. Pierce points out that the enforcement of a closing order at first would have been more efficacious. As to the other eight cases, "the General Purposes Committee (to whom the duty of examining the records of inspection of dwelling houses was delegated) recommended the Council in November to issue closing orders, as both properties were in a very bad state of repair. The Council, however, referred the matter back to the Committee, who subsequently decided that before issuing closing orders a modified form of preliminary notice be sent to the owners, specifying the work to be done to put the premises into repair. Thus the matter of the eight cottages reported remained at the end of the year." Dr. Pierce goes on to say "the alteration in procedure prescribed by the new Housing and Town Planning Act with respect to houses unfit for habitation does not appear to be an improvement upon that of the old. The statutory notice under the 1890 Act called upon the owner to put the dwelling into repair within a specified time, and that in default a closing order would be applied for. The new Act requires the local authority to issue a closing order forthwith if it appears to them that the dwelling is unfit for habitation. In a district where cottages are extremely scarce, the Council are naturally reluctant to issue closing orders, and under these circumstances it appears to be of questionable utility for the Medical Officer of Health to report houses unfit for habitation, as he is specifically required to do under the Housing Acts."

Dr. Pierce presented a special report to the Council in July, 1910, on the housing of the working classes in the

Rural District. The report was to the effect that there was a great scarcity of cottages in the district, that many of them were in an insanitary condition and ought to be condemned, that in consequence of the failure of private enterprise to provide sufficient cottages at rents within the reach of the working classes he considered that the Council was called upon to put its powers into force and to build cottages in various parts of the district. After consideration of the report the Council decided to have in the first instance a house to house inspection in two parishes. Dr. Pierce remarks that "this will no doubt yield useful information as to the condition of the existing cottages, but it cannot prove the necessity or otherwise of additional cottages." For this latter purpose he considers that "a system may have to be adopted similar to that in force under the Small Holdings Act inviting applications for cottages in the various parishes." He says further, "The fact is that there is no part of the rural district where cottages would not be immediately taken up if they were built." He brings examples in certain parishes to show that the cottages which are being built by private enterprise are usually let at a higher rent than can be paid by the labouring classes and do not supply the need of those with rural occupations. He mentions also that the only land on which such cottages can be built at remunerative prices is the most low lying and damp in the locality, and that houses built in such localities in parishes where no building by-laws are in force may very possibly have to be condemned later. The process of putting old insanitary cottages into a good state of repair is found to be a slow one.

The whole subject is still being considered by the Rural District Council, which has lately been requested by the Local Government Board to give information as to what action is to be taken.

Hambledon R.D. Dr. Hall reports that "house accommodation, especially for the working classes, is still much needed in the various parishes. A number of this class of building have been built during the year." No mention is made of any action taken under the Housing of the Working Classes Acts.

Reigate R.D. Dr. Porter states that probably some 2,500 to 3,000 houses in the district will need periodical inspection, some of them annually, under the new Regulations. Such inspections have been made in previous years, but the records have not been kept in the detailed form required by the regulations issued under the Housing and Town Planning Act, 1909. He points out that the difficulty in complying with these regulations lies in covering the wide and hilly area of the district and in accomplishing the clerical work as well. It is expected that about a fifth of the number of houses above-mentioned will be inspected yearly.

The Sanitary Inspector was appointed to make the inspections. He visited 342 cottage houses during the year; as a result of these visits 180 preliminary notices and 22 statutory notices were served, and only two remained outstanding at the end of the year, but 4 dwellings were closed by the owners after service of notice to carry out works.

With reference to the scarcity of houses Dr. Porter says "except in the villages of Horley and Merstham it is exceedingly rare to come across an unoccupied cottage; the demand in fact exceeds the supply, and the tenants of dilapidated dwellings have great difficulty in finding other accommodation if the question of closure is raised."

WATER SUPPLIES.

The valuable Report upon Public Water Supplies in the County issued by Dr. Seaton in his annual report for 1905 gave full particulars of the various water companies, their sources of supply, the areas served by them, and other explanatory details. It is therefore unnecessary now to do more than to mention briefly the supply of each separate sanitary district, and to add the notes of medical officers of health upon any matters of special interest that arose in 1910 in connexion with water supplies.

Barnes U.D. Metropolitan Water Board. The water is obtained from the Thames. Every year one or two old private wells in the district have to be closed.

Carshalton U.D. Sutton District Water Company. The water is obtained from wells in the chalk at Sutton and Woodmansterne, and is softened.

Caterham U.D. East Surrey Water Company. The water is obtained from deep borings in the chalk at Kenley and Purley, and is softened.

Chertsey U.D. West Surrey Water Company. The water is obtained from the Thames at an intake a short distance above Walton Bridge.

Dorking U.D. Dorking Water Company. The water is obtained from three sources in the lower greensand formation, viz.:—the Redlands springs above the Holmwood, the Rookery springs at Westcott, and the Station Road well in Dorking.

Egham U.D. The mains of the South West Suburban Water Company (for notes upon which see Windlesham U.D.) supply the urban portion of the district. The rural parts depend upon wells.

Epsom U.D. Supply obtained by the Urban District Council from deep borings in the chalk.

A proposal was made during the year to lay a main to the hamlet of Langley Bottom, consisting of 36 houses, whose only source of supply was rain water from roofs collected in tanks. No decision had been arrived at by the end of the year.

Esher and the Dittons U.D. Metropolitan Water Board.

Farnham U.D. Principal supply from Farnham Water Company. The water is obtained partly from an extensive gathering ground at Hale and partly from a deep well in the greensand near the river; it is mixed in a reservoir before delivery. A part of the district is supplied by the Wey Valley Water Company, whose water for this district is obtained from the Frimley and Farnborough Company's deep wells in the chalk.

Frimley U.D. Frimley and Farnborough District Water Company. The supply is obtained partly from springs in the deep railway cutting at Frimley (Bagshot sand) which give soft water, and partly from deep wells in the chalk at Itchell, which give hard water that is softened before delivery.

Godalming M.B. Corporation Water Works; supply obtained from springs in the lower greensand. Extensions were in progress at the end of the year, new borings being made in the Ockford valley.

Guildford M.B. Corporation Water Works. Deep well and a $15\frac{1}{2}$ inch bore hole in the chalk. A new 18 inch bore hole was sunk in the chalk in June, 1910, in order to obtain an auxiliary supply to be available for emergency.

Ham U.D. Metropolitan Water Board.

Kingston-upon-Thames M.B. Metropolitan Water Board.

Leatherhead U.D. Leatherhead and District Water Company. The water is obtained from borings in the chalk at Fetcham, and is not softened.

Maldens and Coombe U.D. Metropolitan Water Board.

Merton U.D. Most houses supplied by the Metropolitan Water Board. A few houses by the Sutton Water Company.

Molesey E. and W., U.D. Metropolitan Water Board.

Reigate M.B. East Surrey Water Company (see Caterham). A few houses have wells; 3 of these were found unsatisfactory and were replaced by Company's water during the year.

Richmond M.B. The Corporation obtains its supply partly from the Metropolitan Water Board in bulk, partly from deep wells, one in oolite and one in chalk, and partly from a well in gravel beds at Petersham.

New filter beds at Petersham, through which all the water obtained from the Petersham well will be passed, were completed in July, 1910, and have acted efficiently.

Surbiton U.D. Metropolitan Water Board; intake at Sunbury.

Sutton U.D. Sutton District Water Company (see Carshalton U.D.).

Walton-on-Thames U.D. Most of the district from West Surrey Water Company (see Chertsey U.D.)

Weybridge U.D. Most of the district from West Surrey Water Company (see Chertsey U.D.)

Wimbledon M.B. Metropolitan Water Board; well water from Streatham or river water from the Thames.

Complaints having been made by many residents about the hardness of the water, a deputation of the Public Health Committee interviewed the Metropolitan Water Board in July, 1910, when a promise was made to give the town a mixed and softer supply. The Streatham well water had been the sole supply of North Wimbledon, and its temporary hardness was high. After October a mixed supply was given to this part of the district.

Windlesham U.D. Chiefly from the South West Suburban Water Company. Mains were completed in certain roads in Bagshot at the end of the year. A large number of houses still obtained their supply from the old village mains into which the water was turned from the Mill Pond. The owners of some cottages in Lightwater petitioned for an extension of the Company's mains, but their demand was not sufficiently supported to justify the Council in proceeding further at that time. A number of houses supplied by wells.

It was considered that the South West Suburban Water Company was not using adequate means of purification, and conferences were held in 1910 of delegates from the councils of the districts in Surrey, Middlesex and Berkshire supplied by the Company, at which it was decided to have independent analyses made monthly on behalf of the users, with a view to taking further action if necessary.

Woking U.D. Woking Water Company. Day supply pumped from gravel wells at Chertsey; night supply by gravitation from three chalk wells at Clandon and Horsley. No water yet taken from the Thames by the Company under its powers. Some extensions of the mains reported.

Chertsey R.D. Parishes of Bisley and Pyrford are supplied by the Woking Water Company (see Woking).

Byfleet parish is supplied by the West Surrey Water Company (see Chertsey U.D.)

Thorpe parish is supplied by the South West Suburban Water Company (see Windlesham U.D.)

The main part of Chobham parish is still without a proper water supply; the cost of extension of the South West Suburban Company's supply was considered excessive.

Of 22 well waters analysed 6 were condemned.

Croydon R.D. The whole of the district excepting a few cottages is supplied by public companies:—

Mitcham parish by the Metropolitan Water Board;

Beddington and Woodmansterne parishes and the hamlet of Wallington by the Sutton Water Company (see Carshalton U.D.);

Coulsdon and Sanderstead parishes by the East Surrey Water Company (see Caterham U.D.);

Addington parish by a well sunk in the parish by the Croydon Corporation.

Dorking R.D. Dorking Rural parish and a few of the cottages in Capel and Ockley parishes are supplied by the Dorking Water Company (see Dorking U.D.). Mains have been laid on for general supply to Capel and Ockley but will not be connected until the proposed sewerage of the two parishes is completed.

A part of Newdigate parish is supplied by the East Surrey Water Company (see Caterham U.D.)

Mickleham and Effingham village are supplied by the Leatherhead Water Company (see Leatherhead U.D.)

Coldharbour village (in Capel parish) has a good supply from springs in the lower greensand.

A few cottages on the border of Effingham Common are supplied by the Woking Water Company (see Woking U.D.)

Most of the houses on Effingham Common and those in parts of the parish of Abinger are in want of an improved supply.

Of 4 well waters analysed 2 were unfit for use.

Farnham R.D. Most of the district (2,659 out of 4,300 houses) is supplied by public companies:—

Ash by the Frimley and Farnborough District Water Company (see Frimley U.D.);

Seale, and part of Frensham by the Wey Valley Water Company (whose supply for this part of the district is obtained from the Frimley and Farnborough Company);

Shottermill by the Wey Valley Water Company from wells in the greensand at Hindhead;

Tongham hamlet (in Seale parish) by the Aldershot Water Company from artesian wells in Aldershot.

Other sources of supply in the district are wells and rain water tanks. Most of the wells are shallow and contain surface water; when they are found polluted proper supplies are enforced. Rain water supply is insufficient in dry weather, especially in the Bourne district. In 18 houses at Shottermill soft water was found to be contaminated with lead from the pipes; these houses are now connected with the public service. Many houses in Batts corner—a district

with a very deficient supply—have lately been connected with the mains of the Wey Valley Company. Extension of mains reported in other districts.

Godstone R.D. About nine-tenths of the population supplied by public companies:—

Chelsham and Woldingham parishes by the Chelsham and Woldingham Water Company from a deep well in the chalk at Woldingham; one analysis made during the year showed the possibility of contamination by sewage from houses on neighbouring hills, watch was to be kept over this;

Blechingley, Crowhurst, Farleigh, Godstone, Lingfield, Nutfield, Tandridge and Warlingham by the East Surrey Water Company (see Caterham U.D.);

Limpsfield, Oxted, parts of Tatsfield and of Titsey by the Limpsfield and Oxted Water Company, from two sources, (a) deep wells at Westwood, Tatsfield, main supply, good, (b) Pain's Hill, Limpsfield, subsidiary supply, liable to sewage pollution; a scheme to obviate this by proper drainage was under consideration at the end of the year.

About one-tenth of the population supplied by shallow wells or rain water tanks (part of Tatsfield).

Guildford R.D. The chief part of this district derives its water from public supplies; the building of new houses is largely along water mains.

The Woking Water Company supplies the greater part of the district, viz.:—East and West Clandon, East and West Horsley, Merrow, Ockham and Wisley, Pirbright, Ripley, Send, Worplesdon (see Woking U.D.) Mains were extended at Ockham and Worplesdon in 1910.

Godalming Corporation supplies Compton (nearly all the houses now connected with the mains), and Godalming Rural parish (see Godalming U.D.).

The Hurtwood Water Company supplies part of Shere; Water obtained from Tillingbourne Valley and well at Gomshall. Sir R. M. Bray's Private Water Works supply part of Shere; water obtained from two shallow wells.

The Wey Valley Water Company supplies Puttenham and Wanborough (see Farnham U.D. for source).

The Guildford Corporation supplies Artington (see Guildford M.B.)

The following villages needing improvement were dealt with during the year:—Compton, extension of mains; Eashing, two trial bore holes made to supply certain cottages, found satisfactory, work to be proceeded with; Prew's Lane, Send, of 13 shallow well waters analysed 10 were found unsatisfactory, therefore the mains of the Woking Water Company were to be extended under the District Council's guarantee; East Horsley, supply improved but still unsatisfactory, several cottages have either to depend on unfiltered rain water, or to go considerable distances to stand pipes on the mains of the Woking Water Company. Sixty-five samples of water from shallow wells were analysed, and steps were to be taken for improving unsatisfactory supplies.

Hambleton R.D. The District Council provides public supplies for Haslemere, Wonersh and Chilworth.

Godalming Corporation supplies Bramley, Hambleton, Witley and Milford, and Peperharow (see Godalming M.B.)

Guildford Corporation supplies Shalford and Chilworth Road (see Guildford M.B.).

The Cranleigh Water Company supplies Cranleigh and part of Wonersh, from springs in the greensand at Nore. Mains were extended at Wonersh during the year.

The Hurtwood Water Company supplies Ewhurst (see Guildford R.D.). Several large estates have their own private water supplies.

Dr. Hall reports: "In the remaining parishes the water supply is derived from deep and surface wells often of a doubtful nature and liable to pollution from foulings by drainage from manured ground, soakage from privies or cesspools, slop water or surface washings. The supply is liable to shortage in the summer time. The water supply of these parishes is engaging the serious attention of the Council." These parishes appear to be Alfold, Chiddingfold, Dunsfold, Hascombe and Thursley.

Reigate R.D. The East Surrey Water Company (see Caterham U.D.) supplies all the parishes save Kingswood. Most of the dwellings near the mains have water laid on to them.

Kingswood: the northern part of the parish is supplied by the Sutton Water Company (see Carshalton U.D.), which also supplies a few houses at Walton-on-the-Hill. In the southern part of the parish most houses obtain water from a private installation, a well sunk in the chalk, supplemented in dry weather from the East Surrey Water Company.

Failing public water supplies, wells are used, which are often unsatisfactory in quality though not in quantity. Dr. Porter regrets that building by-laws do not cover the construction of wells in rural districts; he finds that they are often badly made by builders. Of 11 well waters analysed during the year 5 were unsatisfactory and the owners were called upon to connect with the mains.

POLLUTION OF STREAMS.

No formal steps for the prevention of pollution of streams were taken by the County Council in 1910. The greater part of the county is in the Thames Watershed; the streams in it, including their smallest tributaries, are carefully supervised by the Thames Conservancy Board. The means of disposal of sewage in the county have an important bearing upon this subject; they are described on pp. 86-96.

The following notes show the steps taken by local sanitary authorities to prevent the pollution of streams so far as they are mentioned in the reports of medical officers of health.

Barnes U.D. Beverley Brook: the question of responsibility for its care was still under discussion at the end of the year.

Esher U.D. The water courses of the district were inspected and kept free from nuisances; there was no occasion for taking any formal action. During the summer the stream known as the Rythe was cleaned out from Winter's Bridge down to the point of its discharge into the Thames. For about 150 yards its bed is uneven, and the water remains stagnant in pools, causing nuisance which can only be abated by thorough cleaning.

Kingston M.B. Hogg's Mill Stream: Dr. Beale Collins reports that the condition of this stream within the borough is now more satisfactory than it used to be. The bed was cleared of mud and the banks were straightened between the Three Bridges and the Lower Mill. He suggests the desirability of further improvements above the Three Bridges.

Maldens and Coombe U.D. Dr. Davison reports that the Hogg's Mill Stream is apt to overflow its banks, leaving stagnant water which becomes offensive in warm weather; he draws attention to the need of cleaning the bed of the stream, and of strengthening and raising its banks.

Merton U.D. "The streams receive full attention and there were no complaints."

Reigate M.B. The Mole and its tributaries form the natural drainage outlet for the borough; its condition is carefully watched by the Thames Conservancy. A notice was served on the Corporation with regard to a private sewage installation, but was not proceeded with. Another minor source of pollution by a surface drain was receiving the attention of the Council at the end of the year.

Surbiton U.D. Tolworth Brook: Dr. Coleman remarks that when the Tolworth sewage farm ceases to exist, upon the transfer to the new sewage works, this brook will cease to serve as a conduit for the sewage effluent, and will probably have very little water in it.

Windlesham U.D. Notice was served on the Council by the Thames Conservancy with respect to the pollution of the Windle Brook by an overflow from a cesspool taking the drainage of several houses in Bagshot; the Council took the necessary steps to remedy this. A similar notice was received with respect to pollution of the brook by a surface drain at Bagshot; the matter was receiving attention at the end of the year.

Chertsey R.D. Notices were served upon owners and occupiers to abate nuisances arising from pollution of the water-course in Byfleet village, and were complied with. Pollution of the Rive ditch at West Byfleet was found to be due to percolation from the sewage works; steps were taken to prevent this. Notices were served on owners of property in Chobham to abate nuisances due to the abuse of their surface drains, polluting the Bourne.

Croydon R.D. Considerable attention is paid to the River Wandle and to the Pyl Brook, pollution having been

caused often by the effluents discharging into them. Dr. Fegen reports that all necessary steps were taken in the matter.

Dorking R.D. Complaints were received from the Thames Conservancy about the effluent from the Holmwood sewage works, and steps were taken to amend this.

Epsom R.D. The Council dealt with a number of drains and overflows from cesspools which were discharging into ditches or watercourses at Bookham. Complaints were received from the Thames Conservancy that polluting matter was being discharged from a surface water drain into the Mole at Cobham; steps were taken to prevent this.

Farnham R.D. Dr. Tanner reports that the Thames Conservancy watches over the streams and that the Council deals with any complaints that are made.

Godstone R.D. The periodic Bourne flow from the chalk in Whyteleafe was anticipated, and a pipe was laid to carry off the water, and to prevent nuisance.

Reigate R.D. The only streams are the Mole and its tributaries, which are watched over by the Thames Conservancy. Pollutions by effluents from the Horley Gas Works and from the Linotype works were reported, and received attention.

DISPOSAL OF SEWAGE AND REFUSE.

The methods of disposal of sewage and refuse in all the sanitary districts are these following:—

Barnes U.D. The sewers join those of Richmond, and the sewage is passed through bacterial filtering beds at the joint sewage works in Mortlake.

Refuse is put on to barges on the Thames, causing nuisance. Other methods of disposal have been under consideration. Dr. Crookshank recommends a destructor.

Carshalton U.D. Early in 1910 the Council received the sanction of the Local Government Board to borrow £10,850 for the purpose of carrying out the scheme proposed by Messrs. Strachan and Weekes for re-modelling the sewage farm and disposal works. It was anticipated that the work would be completed by Lady Day, 1911. Hitherto the treatment has been by passage through a septic tank followed by intermittent filtration through artificially prepared beds covering about $1\frac{1}{2}$ acres.

Refuse removed weekly by a contractor. The provision of a destructor was proposed but was considered unnecessary.

Caterham U.D. Sewage is passed through settling tanks, streaming beds and sand filters, before distribution over a land irrigation area. Additions were made to the sewage works during the year and a very satisfactory effluent was obtained.

Refuse removed by the Council, and burned either at local brickworks or on sites far from inhabited houses.

Chertsey U.D. The sewage of the Addlestone and Chertsey Wards is passed through sedimentation tanks, contact beds, sand filters and land. There are still many cesspools in the district.

Refuse is removed weekly by the Council.

Dorking U.D. The sewage is clarified by chemical precipitation (lime and alumino-ferric), and is then treated partly on a specially prepared land filtration area and partly by passage through contact beds.

Refuse is collected weekly by the Council and burned in the new destructor completed in May, 1910.

Egham U.D. No part of the district is sewered. Pail closets are gradually superseding cess pits.

Refuse regularly removed by the Council.

Epsom U.D. The sewage from the town and one asylum is conveyed to four tanks on the sewage farm in which some of the solids are deposited, and the effluent is treated by land irrigation. The sewage of the other two asylums and the epileptic colony is treated in a septic tank, the effluent from which is passed through a bed of clinker before being treated on the land. The effluent from all parts of the land is treated in contact beds, before being discharged into a branch of the Hogg's Mill Stream. Some new contact beds were constructed during the year and the upward filter was enlarged. In February, 1910, the Local Government Board gave consent to borrow £4,796 for carrying out a scheme prepared by the Surveyor for disposing of the sludge collected in the sedimentation tanks. The work was completed in October. The sludge passes from the tanks into chambers, is distributed by ejectors through mains on to various parts of the farm, and is then discharged into prepared furrows and covered at once with earth.

Refuse is removed by the Council and burned in a destructor.

Esher and the Dittons U.D. The sewage is treated by chemical precipitation of solids with alumino-ferric, and downward filtration on the farm; the effluent is discharged into the Mole. Additional tanks are likely to be required shortly owing to increase of the population.

Refuse is collected weekly by the Council and burned in brickfields at Claygate.

Farnham U.D. Sewage is filtered through domestic ashes at pumping station; the filtrate is pumped to the farm where it is irrigated over land which is underdrained; the effluent is passed through a large filter composed of layers of gravel, shingle, cinders and ashes. Sewage farm was extended at the end of the year by the addition of about $3\frac{1}{2}$ acres of land.

Refuse is collected by the Council weekly, mixed with sewage sludge at the pumping station, and the mixture is sold to farmers as manure.

Frimley U.D. The sewage is treated by filtration through coke followed by land irrigation. Many houses were connected with the sewers at Frimley Green during the year; formerly cesspools in this district had been a source of nuisance.

Refuse is collected weekly by the Council.

Godalming M.B. The sewage is treated by mechanical screening, filtration through coke, sludge deposit, and agricultural drainage on sewage farm.

Refuse is collected by the Council.

Guildford M.B. The sewage is treated (1) partly by septic tanks, contact beds and land filtration, (2) partly by

sedimentation tanks, continuous filters and land filtration, and (3) partly by primary, secondary and tertiary contact beds.

The refuse is burned in a new destructor which was opened in October; this now supplies power for pumping town sewage from various points by Shone's ejectors.

Ham U.D. The sewage is treated by chemical precipitation of solids with alumino-ferric, and passage through coarse and fine clinker filter beds; the effluent is discharged into the Thames.

Refuse is removed fortnightly.

Kingston-upon-Thames M.B. The sewage is treated by chemical precipitation of solids with alum, blood, charcoal and clay, and passage through continuous filter beds. The pressed sludge is sold as native guano.

Refuse is collected by the Council; some is burned in a destructor, some is deposited on waste land.

Leatherhead U.D. The sewage is treated by passage through septic tanks, and coarse and fine contact beds, followed by land irrigation.

House refuse is collected weekly by the Council and deposited on land.

Maldens and Coombe U.D. Alterations and additions to the sewage works were made during the year. Sedimentation is now largely taking the place of slate filtration, before passage of the sewage through a new percolating filter; the effluent goes on to the land. Sludge is dried and disposed of locally.

Refuse is collected by the Council and deposited on land; this method of disposal causes considerable difficulty.

Merton U.D. The sewage is treated on the sewage farm of the Croydon Rural District at Colliers Wood, by precipitation, passage through contact beds, and land filtration.

The question of means for the lowering of surface water in the district was under consideration during the year.

Refuse is removed by the Council and deposited in a pit.

Molesey, E. and W., U.D. Sewage is treated by precipitation and intermittent downward filtration.

Refuse removed weekly by the Council to the sewage works; where it is burned and dug in.

Reigate M.B. Sewage is screened, flows into sedimentation tanks, is then distributed by revolving sprinklers on to coarse and fine clinker filters, and the final effluent is discharged into the Mole. Shone's ejectors are used for raising the sewage from three parts of the town.

House refuse is removed weekly, trade refuse upon payment of a small charge; some is burned or dug in at the sewage works, some is sold to brickmakers.

Richmond M.B. Sewage is treated jointly with that of Barnes by passage through bacterial filtering beds at the sewage works in Mortlake.

Refuse is collected by the Council.

Surbiton U.D. In December, 1910, work was begun under a new scheme prepared by the Surveyor for treatment of the sewage of the whole district. Several Inquiries had been held in 1907, 1908, 1909 and 1910 before a scheme satisfactory to the Local Government Board was put forward. The scheme adopted was approved in part in 1910, and a loan of £55,345 for the whole work was finally sanc-

tioned in May, 1911. The sewage will be treated by chemical precipitation, and subsequent filtration. At present the main part of the Surbiton sewage is treated with the Kingston sewage by agreement expiring on June 30th, 1912; the sewage of the outlying portions of the district, Tolworth, Hook and Southborough, is treated at the Tolworth sewage farm.

Refuse, collected by the Council; a destructor is to be built which will provide power for engines at the sewage works.

Sutton U.D. Sewage is treated by passage through contact beds and then through percolating filters by means of sprinklers. There are now only some 36 cesspools left in the district.

Refuse is removed by the Council and tipped at the sewage farm.

Walton-on-Thames U.D. Sewage is treated by chemical precipitation with alumino-ferric and lime, followed by broad irrigation.

Refuse is removed by the Council.

Weybridge U.D. There is a Joint Sewerage Committee for Weybridge and Oatlands. The treatment consists of chemical precipitation with lime and alumino-ferric, followed by intermittent land filtration. The sludge is pressed and used by farmers.

Refuse is removed by the Council.

Wimbledon M.B. The sewage is treated by passage through settling tanks (chemical precipitation being used for a part of it), two sets of bacterial filters, and land irrigation.

Refuse is collected by the Council weekly, and oftener in the summer.

Windlesham U.D. is a cesspool district, excepting a number of houses at the Sunningdale end the sewage of which is treated by continuous filtration at a private sewage farm. Cesspools are emptied by the Council.

Refuse is removed by the Council.

Woking U.D. Sewage is treated by sedimentation and upward filtration through coke, and land filtration. Additional primary contact beds are now being constructed. Owing to the growth of the district the Council proposed to acquire additional land for sewage disposal by means of a provisional order for compulsory purchase of 40 acres adjoining the sewage farm. It may be added that at a Local Government Board Inquiry held on February 1st, 1911, considerable opposition was raised to this proposal, which was finally disapproved. The scheme for the sewage of Horsell begun in 1908 was completed early in 1910.

Refuse is removed by the Council and tipped on to the recreation ground to fill up low lying portions.

Chertsey R.D. This is nearly all a cesspool district. At Bisley, Chobham, Pyrford and Thorpe, emptying of cesspools is not undertaken by the Council. At Byfleet emptying of cesspools is undertaken by the Council, also removal of house refuse.

The sanction of the Local Government Board was obtained in 1910 for a loan proposed at an Inquiry held in November, 1909, to borrow (with subsequent additions) £26,775 for the sewerage of Byfleet parish. The work of laying the sewers was in progress at the end of the year.

A scheme for the sewerage of Pyrford was in course of preparation.

Croydon R.D. Sewage is treated by precipitation, passage through contact beds and land filtration. A new contact bed was begun during the year to meet the growth of the district. Sewers were being extended in Beddington and Sanderstead.

Dorking R.D. One part of the district, viz., the parish of Dorking Rural, is drained by four separate systems of sewers, one of which is connected with the Dorking U.D. system, and the other three are connected with outfall works for (1) South Holmwood, (2) North and Mid Holmwood, and (3) Westcott. The sewage in all these is treated on the same principle, viz., passage through sedimentation tanks and contact beds, followed by land irrigation.

A scheme for the drainage of Capel village was proposed at a Local Government Board Inquiry held at the end of 1909; this was followed by negotiations as to modifications to reduce the expense, which were still proceeding at the end of 1910.

A Local Government Board Inquiry was held in January, 1910, into an application by the Rural District Council for a provisional order to acquire land for the purpose of sewage disposal in Ockley parish, and for sanction to borrow £5,500 for sewerage and sewage disposal. The question of acquiring land was subsequently settled by agreement, but sanction for the sewage scheme had not been obtained up to the end of the year.

Epsom R.D. Cheam and Cuddington: Sewage is treated by open septic tank and double contact beds, followed by land irrigation. A scheme proposed for dealing with the sewage of the Belmont section, and providing more power-

ful machinery at the works, was the subject of a Local Government Board Inquiry, and was opposed by the Sutton Urban District Council, which wished to include a part of Cheam in its district, and claimed that the sewage could be treated more economically at the Sutton sewage farm. The Local Government Board deferred further consideration of the proposal until the Surrey County Council should decide upon a concurrent application made for the inclusion of Cheam with the Sutton Urban District. Other questions as to the drainage of a part of Cuddington parish were considered but not decided during the year.

Cobham: An application was made in October for a provisional order for the acquisition of land adjacent to the present sewage works, in order to increase the area of land available for treatment. The system of treatment is by open septic tank and double contact beds, followed by land irrigation.

Ewell: Sewage is treated at the sewage works on the same system as that of Cobham.

The Council empties cesspools and tub closets in Banstead and in parts of Cuddington where sewers are not yet available.

Refuse is collected by the Council weekly in Ashtead and Cheam, fortnightly in Cuddington and Ewell. The Council obtained an order of the Local Government Board to enable it to undertake removal of house refuse from Cobham, making the cost a special charge upon the parish.

Farnham R.D. A system of drainage for Shottermill approached completion at the end of the year.

Plans for a drainage scheme to include Hale, Heath End, Weybourne, Badshot Lea, Tongham and Ash were prepared

and were considered by a special committee during the year. It was proposed to buy land for sewage disposal works near North Camp Station (S.E. Railway).

Public scavenging is undertaken three times a week in Hale Ward, scavenging by private subscription twice a week in part of Shottermill.

Dr. Tanner urges that the consent of the Local Government Board should be given to a by-law compelling owners to provide enough land attached to all houses to permit of proper disposal of sewage thereon, instead of expensive drainage schemes.

Godstone U.D. The following parts of the district are sewered:—

Baldwin's Hill: sewage treated at East Grinstead sewage works.

Blechingley: sewage treated in the district by precipitation and broad irrigation.

Dormans Park: sewage treated in small works by passage through septic tanks and bacterial filters.

Godstone: sewage treated by septic tanks, filtration, and broad irrigation. (Godstone Station is a cesspool district).

Lingfield: sewage treated by septic tanks and land irrigation, clay, which gives a fairly satisfactory effluent.

Limpsfield and Oxted: sewage treated by septic tanks, filtration and broad irrigation; more filter beds and more land are required.

Provision for drainage and sewage treatment at Tandridge, Warlingham and Whyteleafe were under consideration during the year; this is urgently needed at Whyteleafe.

Guildford R.D. Two parts of the district are sewered, viz. :—

Shere: sewage treated by primary and secondary contact beds and land irrigation.

Ripley: sewage treated by sedimentation, primary and secondary contact beds and land filtration.

A sewage van was bought for Peaslake during the year.

Refuse is collected from districts of an urban character, Merrow, part of Farncombe, and Pirbright.

Hambleton R.D. Public sewerage systems in the parishes of Bramley, Cranleigh, Haslemere and Wonersh. During the year there were extensions of sewers and provision of new bacterial beds for the Grayswood district of Haslemere.

The drainage of Shalford was begun in 1910.

In the other villages cesspools or garden ground are used for sewage disposal.

Reigate R.D. Four of the thirteen parishes are sewered in part, viz., Charlwood, Horley, Merstham and Nutfield. In each case after slight preliminary treatment the sewage is dealt with on a small farm.

In other parts of the district cesspools are used. Dr. Porter points out the objection to cesspools in relation to public water supplies in chalk districts. He knows of no unsewered parishes where a drainage system is a necessity at present; he suggests that in rapidly growing parts of the district, such a necessity, which must eventually come, may be postponed for a time by the provision of sewage carts.

FOOD.

The reports of medical officers of health show that careful watch is kept in most districts, and especially in urban districts, over places where food is exposed for sale or is deposited for the purpose of sale or of preparation for sale.

Few matters that arose during the year in this connexion call for special mention.

Barnes U.D. The Medical Officer of Health made a special report urging that the fried fish trade in the district should be scheduled under section 51 of the Public Health Acts Amendments Act, 1907, as an offensive trade, and by-laws were to be prepared accordingly and were to be submitted to the Local Government Board for approval.

Kingston-upon-Thames M.B. Dr. Beale Collins reported on an outbreak of food poisoning in Norbiton, about 100 cases having occurred among the customers of a fried fish and potato shop; none were serious, all recovered. The results of analysis were indefinite, but the fish was blamed. [There is reason to think that this was similar to other outbreaks occurring in London at the same period, and apparently associated with the consumption of flat fish (plaice) obtained from certain sewage polluted estuaries in the North Sea.]

Woking U.D. Three seizures of tuberculous meat were reported, followed by two prosecutions, both resulting in the infliction of substantial penalties.

SLAUGHTER HOUSES.

The inspection of slaughter houses is carried out regularly in most districts. There are no public abattoirs. Home killed meat is inspected locally, as far as possible in the

slaughter houses. Into the districts close to London most meat is brought ready for sale from the central meat markets, where it has already been inspected.

MILK.

In the final Report of the Royal Commission on Tuberculosis lately published it is stated clearly that man is susceptible to the bacilli of bovine tubercle, and special attention is drawn to the danger arising from the consumption of infected milk. The Commissioners express the opinion that measures for the effective control of the milk supply should prohibit the sale of milk from a recognisably tuberculous cow, whether the disease is situated in the udder or in the internal organs. This emphasizes the need of systematic veterinary inspection of milch cows in all districts as a preliminary to further action.

In most of the reports of medical officers of health mention is made of regular supervision of dairies, cowsheds and milk shops. In several of the reports attention is drawn to the need of greater cleanliness in the milk trade. Dr. Fegen and Dr. Crookshank draw attention to the ease with which applicants may be admitted to the register as dairy-men, cowkeepers and purveyors of milk regardless of previous conviction in other districts or of the condition of their premises.

Provision is made for regular veterinary inspection of milch cows in 18 districts, viz.:—Carshalton U.D., Chertsey U.D., Egham U.D., Epsom U.D., Esher and the Dittons U.D., Frimley U.D., Kingston M.B., Maldens and Coombe U.D., Molesey, E. and W., U.D., Richmond U.D., Surbiton U.D., Sutton U.D., Walton-on-Thames U.D., Weybridge U.D., Woking U.D., Croydon R.D., Epsom R.D., and in Farnham U.D. (occasional only). In Barnes U.D.,

there are no cowsheds. In the reports of 8 districts it is stated that no provision of the kind is made, and in the reports of the remaining 9 districts no reference is made to the subject.

In the Godstone R.D. report Dr. Robertson draws attention to a case in which cows obviously tuberculous, and certified as such by a veterinary inspector after examination under the London County Council (General Powers) Act, 1907, had been sold, and the seller would not disclose the name of the purchaser, who could not be traced. He considers that some system of registration of the disposal of every tuberculous cow is the only adequate remedy for such a state of affairs.

SALE OF FOODS AND DRUGS ACTS, 1875 TO 1907.

These Acts are administered by the General Purposes Committee of the County Council for the whole of the Administrative County excepting the boroughs of Guildford and Reigate. The Public Analyst is Mr. Edward Hinks, F.C.S. For the collection of samples the county is divided into four districts for which four Inspectors (who are also inspectors of weights and measures) are responsible.

The following table shows the nature and number of samples analysed under the Acts during 1910 and the results of analysis.

SALE OF FOOD AND DRUGS ACTS.
 SAMPLES ANALYSED, 1910.

Articles.	Number of Samples Analysed.	Number Genuine.	Number Adulterated.	Prosecutions.	Convictions.
Ale	6	6	—	—	—
Almonds	3	3	—	—	—
Arrowroot	2	2	—	—	—
Baking Powder	2	2	—	—	—
Barley, Pearl	1	1	—	—	—
Borax	1	—	1	—	—
Brandy	3	3	—	—	—
Brawn	2	1	1	—	—
Bread	3	3	—	—	—
Butter	349	324	25	16	14
Camphorated Oil	1	1	—	—	—
Cheese, Cream	68	57	11	4	4
Cider	3	3	—	—	—
Cloves	1	1	—	—	—
Cocoa	6	6	—	—	—
„ Mixture	2	1	1	—	—
Cod Liver Oil	2	2	—	—	—
Coffee	13	12	1	—	—
„ and Chicory	3	2	1	—	—
Cream of Tartar	2	2	—	—	—
Custard Powder	1	1	—	—	—
Dripping	6	4	2	2	2
Epsom Salts	4	4	—	—	—
Flour (Self Raising) ...	4	4	—	—	—
Frying Oil	1	1	—	—	—
French Capers	1	1	—	—	—
Gentian Root (Ground) ...	1	1	—	—	—
Gin	13	8	5	—	—
Ginger	3	3	—	—	—
„ (Ground)	8	7	1	—	—
Honey	1	1	—	—	—
Ipecacuanha Wine	1	1	—	—	—
Jam	13	11	2	—	—
Lard	63	63	—	—	—
Linseed Oil	4	3	1	1	1
Liquorice Powder	10	10	—	—	—
Magnesia, Citrate of ...	1	1	—	—	—
Margarine	14	14	—	—	—
Milk (Skimmed, Separated, Scalded and Sterilized)	635	552	83	36	23
Mustard	10	9	1	—	—
Nitre, Sweet Spirit of ...	1	1	—	—	—
Oatmeal (Ground)	3	3	—	—	—
Olive Oil	9	4	5	2	2

Articles.	Number of Samples Analysed.	Number Genuine.	Number Adulterated.	Prosecutions.	Convictions.
Pepper ...	8	8	—	—	—
Peppermint (Spirit) ...	2	2	—	—	—
Rice (Flaked and Ground) ...	41	3	38	—	—
Rum ...	14	12	2	—	—
Sausage (German) ...	3	2	1	—	—
Sugar ...	28	26	2	—	—
Sulphur (Flowers) ...	1	1	—	—	—
Sweetmeats ...	5	5	—	—	—
Tomato Catsup ...	1	1	—	—	—
Turpentine (Spirit) ...	1	1	—	—	—
Veal and Ham Patties ...	1	—	1	—	—
Vinegar (Malt) ...	10	10	—	—	—
Whiskey ...	86	68	18	5	2
	1,484	1,280	203	66	48

Guildford M.B. Mr. A. Angell, Ph.D., is the public analyst; the Chief Constable is the officer appointed to take samples.

The number of samples analysed in 1910 was 113, of which 109 were found to be genuine and 4 adulterated. The adulterated articles were 2 samples of milk and 1 of condensed milk, all deficient in fat, and 1 sample of cream containing boron preservative; no legal proceedings were taken, but the vendors were cautioned.

Reigate M.B. Mr. Edward Hinks, F.C.S., is the public analyst; the Sanitary Inspector is the officer appointed to take samples.

The number of samples analysed in 1910 was 65, of which 55 were found to be genuine and 10 adulterated. The adulterated articles were (a) 4 samples of milk deficient in fat and 1 containing added water; the vendors of all these were cautioned; (b) 3 samples of milk containing boric acid, proceedings were taken in each case and convictions followed

in two; (c) 1 sample of golden syrup, proceedings were taken and conviction followed; (d) 1 sample of margarine containing added water and boron preservative, proceedings were taken and conviction followed.

FACTORY AND WORKSHOP ACT, 1901.

Under this Act local sanitary authorities are charged with certain duties of inspection of factories, workshops and workplaces, dealing with defects found, including both nuisances under the Public Health Acts and certain offences under the special Act, supervision of home workers, and registration of workshops in their districts.

All the district reports, save those of Woking U.D., Guildford R.D., and Hambledon R.D., contain copies of the tabular return of details required to show the administration of the Act during the year.

MIDWIVES ACT, 1902.

This Act provides that from and after April 1st, 1910, no woman shall habitually and for gain attend women in childbirth otherwise than under the direction of a qualified medical practitioner unless she be certified under the Act, and that any woman so acting without being certified shall be liable on summary conviction to a fine not exceeding ten pounds.

Women in practice as midwives when the Act was passed were entitled to claim to be certified without examination within two years from the date when the Act came into operation, upon production of certain certificates of competence, or evidence of having been in practice for at least one year, and of good character.

It was found that many uncertified women continued to practise after the expiration of the period of grace, generally pleading in excuse that they had not known of the privilege above mentioned. In the main these women were no less competent than those who had taken advantage of the provisions of the Act; their number was so large that early in 1910 a new rule was approved by the Privy Council extending the time limit of the period of grace to September 30th, 1910. One woman in Surrey obtained her certificate under this rule; most of the uncertified women who had continued in practice failed to apply to be certified.

ADMINISTRATION OF THE ACT.

The County Council is the Local Supervising Authority charged with the administration of the Act, and is responsible for the inspection of midwives practising in the Administrative County.

Until the end of 1909 the inspection of midwives in Surrey was carried out by the medical officers of health in their own districts, acting as agents of the County Council for the purpose.

On January 1st, 1910, this system was changed, Miss R. Florence L. Palk, the Superintendent of the County Nursing Association, having been appointed Inspector of Midwives for the whole county, with direct responsibility to the County Medical Officer of Health for that part of her work.

Between January 1st and September 30th Miss Palk paid 268 visits of inspection to midwives. Owing to ill-health she was obliged to resign her appointment, and Miss Elizabeth Dudley, who succeeded her as Superintendent of the County Nursing Association, took her place as Inspector of Midwives from October 1st to December 31st.

Thereupon it was decided that the county should be divided as nearly as possible into two halves for purposes of inspection of midwives, one inspector to be appointed for each division and to be directly responsible to the County Medical Officer of Health for all work done under the Act. An agreement was made in 1910 with the County Nursing Association whereby that Association undertook to provide two fully qualified nurses, to be approved by the County Medical Officer of Health, to act as inspectors of midwives in the Administrative County for one year from January 1st, 1911. Accordingly Miss Elizabeth Dudley, Superintendent of the Association, was appointed Inspector for the western division, with headquarters at Guildford, and Miss Mary A. Brunton was appointed Inspector for the eastern division, with headquarters at Redhill.

The midwives to be inspected vary greatly in attainments and in fitness for the work: some are well trained and thoroughly competent; many who obtained certificates on the ground of having been in practice before the passing of the Act are far below the standard of the present day. One great object of the inspection has been to instruct the untrained midwives with a view to raising their standard and helping them to comply with the rules of the Central Midwives Board. Some of these women are so illiterate that the task has been a difficult one, but on the whole the results are encouraging.

Arrangements have been made with the medical officers of neighbouring counties for systematic interchange of reports upon midwives living near the Surrey border and practising in more than one county.

PRACTICE OF CERTIFIED MIDWIVES.

The number of midwives who notified their intention to practise in the Administrative County in 1910 was 174.

Some of these undertook temporary duty in connexion with local nursing associations and did not actually practise midwifery.

From returns made by certified midwives upon forms sent to them at the end of 1910 it appears that 4,409 confinements were attended by these women during the year, that is 31.8 per cent. of the number of births registered in the county. It is probable that doctors were present in some of these cases, but the figures if only approximately correct serve to show the large amount of work done by midwives and to emphasise the importance of efficient supervision of their practice.

The following notices, prescribed by the rules of the Central Midwives Board, were received from midwives during the year:—

Still births	...	...	...	...	111
Sending for medical help	...	...	...	...	325
Death of mother	...	...	...	...	2
Death of child	...	...	...	...	24
Puerperal fever	...	...	...	...	6

These cases were investigated as far as was necessary. It is probable that the number of notices received does not represent accurately the number of such cases as should be notified under the rules; the illiterate midwives are apt to fail in the duty of notification.

Six midwives were formally reported during the year for breaches of the rules and for negligence. Of these two undertook to cease practice at once, one undertook to cease practice before the end of the year, and three were kept under strict supervision and showed signs of improvement. One midwife practising in Surrey, having been reported to the Central Midwives Board for negligence and malpractice

during her attendance upon a patient in Middlesex, was formally cautioned by the Board, and was thereafter kept under observation for a probationary period of three months, after which her certificate was returned to her.

Five uncertified women found to be practising as midwives habitually and for gain were formally warned, and have been kept under observation since with a view to further action if necessary.

TRAINING OF MIDWIVES.

The training of midwives is an important part of the voluntary work of the Surrey County Nursing Association. Fourteen nurses were trained by that Association during 1910, of whom 12 succeeded in obtaining the certificate of the Central Midwives Board.

The question of the establishment of a training school for midwives in the county has been considered by the County Nursing Association, and certain funds have already been raised by voluntary effort for this purpose, but further action in the matter has been deferred.

A grant of £200 a year is made by the Surrey Education Committee to the County Nursing Association for the training of nurses.

MEDICAL OFFICERS OF HEALTH OF THE SEPARATE SANITARY DISTRICTS IN 1910.

URBAN DISTRICTS.

1. Barnes	...	...	...	F. Graham Crookshank, M.D.
2. Carshalton	...	...	...	J. Williamson, M.D., D.P.H.
3. Caterham	...	...	...	S. Davey, M.D., D.P.H.
4. Chertsey	...	...	...	H. Hanslow Brind, M.R.C.S., D.P.H.
5. Dorking	...	...	...	J. Williamson, M.D., D.P.H.
6. Egham	...	...	...	G. Trew Cattell, M.D., D.P.H.
7. Epsom	...	...	...	J. Williamson, M.D., D.P.H.
8. Esher and The Dittons	...			A. Senior, M.B., D.P.H.
9. Farnham	...	...	...	S. G. Sloman, M.R.C.S., L.R.C.P.
10. Frimley	...	...	...	N. P. Cadell, L.R.C.P., L.R.C.S.
11. Godalming (M.B.)	...			Gerald F. Bird, M.A., M.B., B.C.
12. Guildford (M.B.)	...			R. W. C. Pierce, M.D., B.Sc., D.P.H.
13. Ham	...	...	...	J. Donald, M.R.C.S., L.R.C.P.
14. Kingston-upon-Thames (M.B.)	...			H. Beale Collins, M.R.C.S., D.P.H.
15. Leatherhead	...	...	...	J. Williamson, M.D., D.P.H.
16. Maldens and Coombe	...			R. Davison, M.D.
17. Merton	...	...	..	D. A. Beliliros, M.R.C.S., D.P.H.
18. Molesey, East and West	...			J. E. Knox, M.B., C.M.
19. Reigate (M.B.)	...	...	...	A. E. Porter, M.A., M.D., D.P.H.
20. Richmond (M.B.)	...			J. H. Crocker, M.D., D.P.H.
21. Surbiton	...	...	...	Owen Coleman, M.D., D.P.H.
22. Sutton	...	...	...	W. Habgood, M.D., D.P.H.
23. Walton-on-Thames	...			H. Hanslow Brind, M.R.C.S., D.P.H.
24. Weybridge	...	...	...
25. Wimbledon (M.B.)	...			Elwin H. T. Nash, M.R.C.S., D.P.H.
26. Windlesham	...	...	...	H. Hanslow Brind, M.R.C.S., D.P.H.
27. Woking	...	...	...	R. W. C. Pierce, M.D., B.Sc., D.P.H.

RURAL DISTRICTS.

1. Chertsey	...	...	...	H. Hanslow Brind, M.R.C.S., D.P.H.
2. Croydon	...	...	...	C. M. Fegen, M.R.C.S., D.P.H.
3. Dorking	...	...	...	J. Williamson, M.D., D.P.H.
4. Epsom	...	...	...
5. Farnham	...	...	...	C. E. Tanner, M.D., F.R.C.S.
6. Godstone	...	...	...	F. W. Robertson, M.A., M.D.
7. Guildford	...	...	...	R. W. C. Pierce, M.D., B.Sc., D.P.H
8. Hambledon	...	...	...	George Hall, M.D.
9. Reigate	...	...	...	A. E. Porter, M.A., M.D., D.P.H.

METEOROLOGY OF SURREY, 1910.

REPORT BY
FRANCIS CAMPBELL-BAYARD, ESQ.,
Secretary, Royal Meteorological Society.

The year has been one of nearly average temperature, very wet, and sunless. With but two exceptions it is the wettest in my record, and in the same record there is only one year with a smaller amount of sunshine. Farm and garden crops have been adversely affected, though vegetables have been plentiful. With the object of showing the different meteorological elements, which together make up the climate of a district, in detail I will compare them with the observations of my own station at Wallington, which has an average of 20 years 1886-1905, and is regularly inspected by the Royal Meteorological Society.

BAROMETER.

On looking at this column, the first thing that strikes one is that there are no less than nine months in which pressure is below the average. Looking at this phenomenon more closely we find that the mean pressure reduced to 32° F. and sea level has only been lower (1) in January once, viz., in 1899; (2) in February twice, viz., in 1900 and 1904; (3) in April four times, viz., in 1889, 1899, 1901, 1907; (4) in May six times, viz., in 1889, 1890, 1891, 1898, 1906, 1907; (5) in June once, viz., in 1907; (6) in July once only, viz., in 1888; (7) in August four times, viz., in 1891, 1897, 1903, 1905; (8) in November it is the lowest, and (9) in December twice only, viz., in 1901, 1909. Whilst with respect to the other three months the mean pressure reduced to 32° F. and sea level has only been higher (1) in March twice, viz., in 1893, 1907; (2) in September it is the highest, and (3) in October eight times, viz., in 1887, 1888, 1890, 1897, 1899, 1904, 1905, 1908. Let us now see what effect this state of pressure had on the temperature and rainfall. When the pressure was low in January and February both the temperature and rainfall were high, in April the temperature was low and the rainfall high, in May and June the temperature was high and the rainfall the average or above, in July both temperature and rainfall were low, in August

and November the temperature was low and the rainfall high, and in December both temperature and rainfall were high. When, however, the pressure was high, in March the temperature was high and the rainfall low, in September both the temperature and rainfall were low, and in October they were both high. With respect to the individual readings, it is strange that the highest and lowest reading of the year occurred in the same month, viz., January. On the 7th pressure reading, etc., was 30.582 in., and on the 24th it was 28.708 in., which latter is the lowest January reading in my record. This gives a range of 1.874 in., which is 0.008 in. above the average of the twenty years 1886-1905.

TEMPERATURE.

This important element of climate presents us this year with some curious contrasts. With reference to the maximum in the shade, *i.e.*, the day temperature, the first three months have a temperature above the average, the temperature in January being only exceeded five times, viz., in 1890, 1898, 1899, 1900, 1902, and in February also five times, viz., 1894, 1897, 1899, 1903, 1908, and in March ten times, viz., 1886, 1890, 1893, 1894, 1896, 1897, 1902, 1903, 1905, 1907. Then we have six months with a shade maximum below the average, of which the two months of July and September are the most remarkable, the shade maximum in July being the lowest for that month in my record, and that in September being only lower five times, viz., 1887, 1894, 1897, 1905, 1909. Then comes October in which the shade maximum has only been exceeded six times, then comes November with a shade maximum the lowest for that month in my record, and after that December with a shade maximum only twice exceeded, viz., in 1898 and 1900. This gives an average day temperature of half a degree below the average. With reference to the minimum temperature in the shade, *i.e.*, the night temperature, we have a different state of things, for we have only three months, viz., July, September and November with a shade minimum below the average, July having a lower shade minimum four times, viz., in 1888, 1891, 1892, and 1907, September a lower shade minimum in eight years, and November with the lowest shade minimum for that month in my record. With respect to the months which have a shade minimum above the average, January has been exceeded in eight years, February in three only, viz., in 1897, 1903 and 1905, March in nine years, April in eleven years, May in five years, June once only in 1896, August five times only, October four times only, viz., in 1898, 1903, 1906 and 1909, and in December twice only, viz., in 1898 and 1900. This gives an average night temperature of $43^{\circ}2$.

which is $1^{\circ}1$ over the average. We now have to consider the mean temperature, that is the mean of the day and night temperatures. Where there is an excess or a deficiency in both the day and the night temperatures, there will, of necessity, be an excess or deficiency in the mean temperature, as for instance in January, February, March, July, September, October, November and December, but the case is different when the excess or deficiency does not occur in both the day and night temperatures, for instance in April, May, June and August. We will consider the four latter months first. In April the deficiency of the day temperature so much exceeded the excess of the night temperature that there is a deficiency of about three-quarters of a degree; in May the reverse is the case, and there is an excess of half a degree; in June there is a similar case to May, and an excess of $1^{\circ}1$; and in August we have a similar state of things to April, and with the like result. We will now consider the mean temperature of the different months and the year as a whole. The mean temperature of January has been exceeded eight times, viz., in 1890, 1896, 1898, 1899, 1900, 1902, 1903 and 1906; in February three times only, viz., in 1897, 1903 and 1905; in March nine times, viz., in 1890, 1893, 1894, 1896, 1897, 1902, 1903, 1905 and 1907; in April there is a greater deficiency in eight years, viz., in 1887, 1888, 1889, 1890, 1891, 1903, 1906 and 1908; in May there is a greater excess in ten years, viz., in 1888, 1889, 1890, 1892, 1893, 1895, 1896, 1904, 1905 and 1908; in June there is a greater excess in seven years, viz., in 1887, 1889, 1891, 1893, 1896, 1897 and 1899; July was an extremely cold month, and there has only been one colder July, viz., 1888 in my record; August though above the average has been a cold month, but the mean temperature has been lower in eleven years, viz., in 1888, 1889, 1890, 1891, 1894, 1895, 1902, 1903, 1905, 1907 and 1908; September has been cool, but the deficiency was greater in the same month in six years, viz., in 1887, 1894, 1897, 1904, 1905 and 1909; October has been very warm, and the excess has only been greater in four years, viz., in 1886, 1898, 1906 and 1908; November has been extremely cold and is the coldest in my record; December has been very warm, and the mean temperature has only been exceeded twice, viz., in 1898 and 1900. The mean temperature of the year is slightly above the average, and has been exceeded nine times, viz., in 1893, 1894, 1896, 1897, 1898, 1899, 1900, 1903 and 1906. The mean minimum temperature on the grass follows the mean shade minimum very closely, the only difference being that in March the shade minimum is slightly above the average whilst the grass minimum is a little below. The importance of these very striking figures will

doubtless be seen in the report of the County Medical Officer. The highest shade maximum temperature $78^{\circ}8$ occurred on June 19th, and the lowest $33^{\circ}9$ on January 26th; and the highest shade minimum temperature $62^{\circ}2$ took place on 15th August, and the lowest $19^{\circ}2$ on January 27th. These figures give a range of $59^{\circ}6$, which is the lowest in my record, and is $10^{\circ}4$ below the average. The highest solar radiation temperature (black-bulb thermometer in vacuo) $130^{\circ}5$ took place on the 21st June, and the lowest minimum temperature on the grass $15^{\circ}1$ on the 27th January.

RELATIVE HUMIDITY.

This element of climate, derived from the difference between the temperature of the air and that of evaporation, is remarkable in that it does not appear to follow the variations in the rainfall, which one might expect. In January and February it is below the average, whilst the rainfall is above, and in the latter month greatly above; in March both are below the average; in April the humidity is the average and the rainfall much above; in May the humidity is above and the rainfall the average; in June both the humidity and the rainfall are above the average, the latter, however, only slightly; in July the humidity is much above and the rainfall below the average; in August and September the humidity is the average, whilst the rainfall in the former month is above, and in the latter below, the average; in October both the humidity and the rainfall are about the average; in November the humidity is below and the rainfall above the average; and in December and also in year the humidity is the average, whilst the rainfall in each case is much above. It appears difficult to give any reason for these variations.

CLOUD.

The amount of cloud is above the average in eight months, viz., April, May, June, July, August, September, October and December; the average in January, and below it in February, March, and November. It does not follow that because there is much cloud there need be much rain, as for instance in July and September, nor because there is little cloud, there need be but a small amount of rain, as for instance in February and November, nor does it follow that because there is a large amount of cloud the temperature should be high, as for instance in April, July, August and September. In January there is an excess of cloud over the average in ten years, viz., in 1889, 1893, 1895, 1896, 1897, 1898, 1900, 1904, 1907 and 1909; in February there is a deficiency, which was only greater in 1887,

1904 and 1905; in March there is also a deficiency, which was only greater in four years, viz., in 1887, 1893, 1894 and 1907; in April there is a large excess which has only been exceeded in three years, viz., in 1895, 1897 and 1905; in May there is an excess which has been exceeded in seven years, viz., in 1887, 1894, 1898, 1900, 1904, 1906 and 1907; in June there is an excess only greater in three years, viz., in 1898, 1907 and 1909; in July the amount of cloud has not been exceeded; in August it has only been exceeded in 1891 and 1902; in September it has been exceeded eight times, viz., in 1887, 1894, 1896, 1897, 1901, 1905, 1907 and 1909; in October it has only been exceeded in 1894; in November there has only been a smaller amount of cloud in 1909, and in December it has been exceeded in nine years, viz., in 1890, 1898, 1899, 1902, 1903, 1904, 1905, 1906 and 1908. With respect to the yearly amount it has only been exceeded once, viz., in 1898.

WIND.

This is the windiest year in my record, for the annual amount of wind force has not been surpassed though it has been equalled in 1886 and 1906. With respect to the individual months there is an excess in ten, a deficiency in March, and an average amount in September. In January the amount has only been exceeded in 1890 and 1906; in February it has been exceeded three times, viz., in 1887, 1888 and 1893; in March the deficiency has been less in eight years, viz., in 1889, 1890, 1893, 1894, 1898, 1899, 1900 and 1904; in April it has been exceeded in four years, viz., in 1886, 1887, 1905 and 1908; in May it has not been exceeded; in June it has only been exceeded three times, viz., in 1886, 1891 and 1907; in July four years, viz., in 1886, 1887, 1895 and 1909; in August once only, viz., in 1906; in September, the average, it has been exceeded in ten years, viz., in 1886, 1887, 1891, 1892, 1893, 1896, 1901, 1903, 1905 and 1908; in October seven years, viz., in 1886, 1891, 1900, 1903, 1906, 1907 and 1909; in November also in seven years, viz., in 1886, 1887, 1888, 1893, 1895, 1905 and 1906; and in December once only, viz., in 1886. Severe gales occurred on February 20th, and on October 14th.

RAINFALL.

With respect to this very important element in the climate of a district, it would appear from the rainfall returns published by the Croydon Natural History and Scientific Society that there has been a very large excess of rain. The record of the Royal Observatory, Greenwich, with its long average of 90 years, shows an excess of

3.74in. ; Surbiton, which has a fifty years (1856-1905) average, has an excess of 1.78in., and Wimbledon Hill, with the same average as Surbiton, one of 4.45in. ; whilst my own station at Wallington, with an average of 25 years (1881-1905) shows an excess of 5.79in. I am inclined to think that the excess of rainfall over the whole county is about six and a half inches. Turning to the individual months we find that January was a month of uneven rainfall, there being a deficiency of 0.09in. at Greenwich, and 0.25in. at Surbiton, and an excess of 0.12in. at Wimbledon Hill, and 0.40in. at Wallington, being only exceeded at the latter station in eight years, viz., in 1886, 1890, 1894, 1899, 1900, 1903, 1904 and 1906. In February there was an excess at all stations, at Greenwich the amount 2.69in. was 1.16in. above the average and has only been exceeded in eight years, viz., in 1823, 1831, 1833, 1835, 1866, 1879, 1883 and 1900 ; at Surbiton 2.85in., an excess of 1.36in. in four years, viz., in 1866, 1879, 1883 and 1900 ; at Wimbledon Hill 3.11in., an excess of 1.69in. in three years, viz., in 1866, 1879 and 1900 ; and at Wallington, an excess of 2.40in. in two years only, viz., in 1883 and 1900. In March there was a deficiency which varied from 0.69in. at Wallington, at Surbiton the fall was 1.09in. and the deficiency 0.45in, at Greenwich 1.10in. and 0.41in., and at Wimbledon Hill 1.10in. and 0.36in. April was a wet month at Wallington and Greenwich, though not at Surbiton and Wimbledon Hill ; at Wallington the fall was 2.93in., which was 1.44in. above the average and was only exceeded in 1897 ; at Greenwich it was 2.64in., and was 1.04in. above the average, and only exceeded in 14 years, viz., in 1818, 1819, 1829, 1830, 1836, 1846, 1848, 1853, 1862, 1871, 1877, 1878, 1899 and 1907 ; whilst at Surbiton there was a fall of 1.08in., and a deficiency of 0.48in. ; and at Wimbledon Hill a fall of 1.48in. and a deficiency of 0.10in. In May the fall at Wallington was an average one, but at Greenwich it was 2.22in. and was 0.27in. above the average ; at Surbiton 1.59in. and 0.21in. under the average ; and at Wimbledon Hill 1.92in. and 0.07in. above the average. In June there would seem to be an excess of rain at all stations : at Wallington the fall was 2.46in. and the excess 0.23in. ; at Greenwich it was 2.08in. and 0.12in. ; at Surbiton 2.53in. and 0.30in. ; and at Wimbledon Hill 2.50in. and 0.28in. July was a dry month at Wallington but wet elsewhere ; at Wallington there was a deficiency of 0.36in., whilst at Greenwich, with a rainfall of 3.52in., there is an excess of 1.07in., and there are in this ninety years' record only twenty Julys with a larger amount ; at Surbiton a rainfall of 2.76in. and an excess of 0.59in. and fifteen Julys with a larger amount ; and at Wimbledon Hill a rainfall of 3.13in. and an excess of 0.84in.,

and fourteen with a larger fall. August also had a fall above the average, except at Surbiton; at Wallington the excess was 1.01in., and there are only four Augusts with a larger amount, viz., 1891, 1900, 1903 and 1908; at Greenwich the fall was 2.43in. and the excess 0.11in., and there are 42 Augusts with a larger amount, and at Wimbledon Hill the rainfall is 2.76in., the excess 0.42in., and there are 22 Augusts with a larger fall, whilst at Surbiton the rainfall is 2.38in. and the deficiency 0.03in., and 25 Augusts with a greater fall. September had a rainfall below the average at all stations; at Wallington the deficiency was 0.71in., but there are eight Septembers with a smaller amount; at Greenwich the rainfall was 0.74in., and the deficiency 1.50in., and there are only eight Septembers with a smaller fall, and these are in the years 1832, 1843, 1851, 1865, 1888, 1890, 1898 and 1907; at Surbiton the fall was 1.08in. and the deficiency 1.14in., and the Septembers with smaller falls occur in 1865, 1877, 1878, 1890, 1891, 1893, 1895, 1898, 1900 and 1907, and number 10; and at Wimbledon Hill the rainfall was 0.83in., the deficiency 1.44in., and the years with a smaller fall are only five in number and are 1854, 1865, 1898, 1900 and 1907. October had a rainfall above the average at Wallington and Wimbledon Hill, but below it at Surbiton and Greenwich; at Wallington the excess was 0.29in., and there are ten Octobers with a larger fall; at Wimbledon Hill the rainfall was 3.06in. and the excess 0.30in., and there are 21 Octobers with a larger fall. With respect to Surbiton the fall is 2.62in., and the deficiency 0.05in., whilst there are no less than 31 Octobers with a smaller fall, and at Greenwich the fall is 2.27in. and the deficiency 0.44in., and the number of Octobers with a smaller rainfall total 41. November was a month with a rainfall in excess of the average; at Wallington the excess was 0.45in., and there are only eight wetter Novembers; at Greenwich the rainfall was 3.38in., the excess 1.10in., and there are in this long record only 16 wetter Novembers; at Surbiton the rainfall was 2.73in. and the excess 0.62in., and there are only 11 wetter Novembers; and at Wimbledon Hill the rainfall was 3.11in. and the excess 0.96in., and there are only 10 wetter Novembers as against 11 at Surbiton. December was one of the wettest Decembers; at Wallington the excess was 1.85in., and there are in the record only two Decembers, viz., in 1886 and 1901, which have a greater fall; at Greenwich the fall was 3.27in. and the excess was 1.31in., and in this long record there are only ten Decembers which have a greater fall; with respect to Surbiton, the rainfall was 3.41in. and the excess above the average 1.51in., and there are in this long record of over 55 years only four Decembers with a greater fall,

viz., in 1868, 1872, 1876 and 1896; and with respect to Wimbledon Hill the rainfall was 3·48in., and the excess over the average was 1·67in., and in this long record of over fifty-five years there are only three Decembers with a greater fall, viz., in 1868, 1876 and 1886. That the year has been a very wet one is also shown by the number of rainy days. The number of days in excess was, at Greenwich 38, and at Wallington 40, both places comparing with the twenty years' average 1886-1905. With respect to the individual months we find that the rainy days were deficient both at Greenwich and Wallington in January, March and September, at Greenwich by 12, and at Wallington by 13; and there was an excess in the number of rainy days at both places in February, April, May, June, July, August, October, November and December; at Greenwich of 50, and at Wallington of 40. The greatest individual fall of rain occurred so far as known on April 16th, and was at Wallington 1·33in., and at Greenwich 1·50in.

SUNSHINE.

There has been a very large deficiency in sunshine during the year, for there is only one year with a smaller total, viz., 1902. There are only four months: January, February, March and November, which have an excess, but it is only a small one except in January. All the other months have a deficiency, and with respect to these a few remarks will be useful. April and July have the lowest respective values of any April or July in my record; May has been less in ten years, viz., in 1887, 1891, 1894, 1898, 1900, 1902, 1903, 1904, 1906 and 1907; June has been less in five years only, viz., in 1888, 1890, 1902, 1907 and 1909; August has been smaller in four years only, viz., in 1891, 1894, 1896 and 1902; September has been smaller in five years only, viz., in 1894, 1896, 1897, 1905 and 1909; October has a larger deficiency in two years only, viz., in 1894 and 1902, and the deficiency in December has only been beaten once, viz., in 1890. With respect to the percentage of possible duration it will be noticed that there is not a single month with a percentage over 39, which is very small. The maximum daily value occurred on June 19th, and was 14·6 hours, and there were in the course of the year 69 sunless days, which is not a very large number.

Abstract of Meteorological Observations at Wallington, Surrey.